COMPARISON OF TIME IN THERAPEUTIC RANGE OF FACE-TO-FACE PATIENTS AND TELEPHONE PATIENTS AT A VA PHARMACIST-RUN ANTICOAGULATION CLINIC

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Objective: To evaluate if the time in therapeutic range (TTR) of patients managed at the Indianapolis VAMC pharmacist-run anticoagulation clinic is consistent with the range reported in a previous study assessing national TTRs. A subgroup analysis of TTR compares warfarin patients who are managed by telephone appointments to patients managed through face-to-face appointments. Methods: The structure of this study is retrospective. A list of all Indianapolis VAMC anticoagulation clinic patients on warfarin at any time between June 2010 and June 2012 was generated and divided into two groups: face-to-face patients and patients followed via telephone appointments. Patients charts were reviewed in random order until 50 patients from each group met eligibility criteria, forming a total study population of 100 patients. We modeled our study structure similarly to the methods of the previous study in order to compare our results to their findings. Preliminary Results: Data collection is complete for face-to-face patients and for 25/50 telephone patients. The average age of the patients under review is 66.3 years old. The overall mean INR is 2.41. The actual percent of time in therapeutic range is 70.81% while our expected percent time in therapeutic range is 53.96%. The average age of the face-to-face patients is 63.3 years old. The mean INR is 2.39. The actual percent of time in therapeutic range is 71.67% while our expected percent time in therapeutic range is 54.38%. The average age of the telephone patients is 72.5 years old. The mean INR is 2.44. The actual percent of time in therapeutic range is 69.09% while our expected percent time in therapeutic range is 52.32%. Conclusion: The percent TTR of patients at the Indianapolis VAMC pharmacist-run anticoagulation clinic exceeds the expected percent TTR. A sub-group analysis reveals comparable results between patients managed face-to-face compared to over the phone.

Learning Objectives:

Explain how the indication for warfarin, age at initiation of warfarin, co-morbid health conditions, number of chronic medications and number of hospitalizations affects the expected percentage of time in therapeutic range.

Recall new and updated recommendations from the CHEST 2012 guidelines.

Self Assessment Questions:

All of the following decrease the expected percentage of time spent in therapeutic range except:

A Younger age
B: Older age
C: Increased number of chronic medications
D: Increased number of hospitalizations

Which of the following is currently recommended when initiating warfarin in a patient being treated as an outpatient?

A Warfarin 5 mg daily x 5 days then dose based on INR results.
B Warfarin 5 mg daily x 2 days then dose based on INR results.
C Warfarin 10 mg daily x 5 days then dose based on INR results.
D Warfarin 10 mg daily x 2 days then dose based on INR results.

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-300 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLICATIONS OF A PHARMACIST CO-MANAGED DISCHARGE CLINIC ON PATIENT OUTCOMES

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Purpose: Unplanned acute hospital readmissions are defined as those which occur within 30 days of discharge. Of the patients who are eventually readmitted to the hospital, 33.3% return within 30 days. Preventability of hospital readmissions may range from 9-49%, and can be related to multiple factors. The University of Chicago Medical Center (UCMC) Discharge Clinic is a physician and pharmacist co-managed clinic where patients are seen within two weeks of hospital discharge. During clinic visits, physicians perform a physical exam and follow-up on lab work and tests, while pharmacists perform medication reconciliation, medication teaching, and help identify medication related issues. The purpose of this study is to evaluate the impact of a healthcare provider visit closely following hospital discharge on patient outcomes, specifically readmission rates. Methods: This retrospective and concurrent, single-center, cohort analysis includes patients discharged from UCMC who had appointments in the UCMC discharge clinic between August 31, 2012 and May 31, 2013; patients readmitted before their clinic appointment, or who utilized appointment for urgent care purposes were excluded. Patients who attended their clinic appointments were compared to those who did not with regards to the primary endpoint. Using electronic medical records and a pharmacist intervention log, data collection included patient demographics, admissions data, and outcomes data. The primary outcome measures are rehospitalization rates and number of Emergency Department visits within 30 days of hospital discharge. Secondary outcomes included adverse drug reactions identified and pharmacist interventions at clinic visits, and number of readmissions for same initial problem. A subgroup analysis was preformed to identify characteristics associated with readmissions and Emergency Department visits at 30 days. Results: to be presented Conclusion: to be presented

Learning Objectives:

Identify specific disease states which predispose patients to an increased risk of readmission within the first thirty days after being discharged from the hospital.

Describe potential causes for preventable hospital readmissions.

Self Assessment Questions:

Congestive heart failure and pneumonia are diagnoses which are associated with a(n) _____.

A Increased risk of 30 day readmission
B: Decreased risk of 30 day readmission
C: Similar risk of 30 day readmission compared to other diagnoses
D: Specific diagnoses do not impact 30 day readmission rates

Which of the following is a potential cause for preventable hospital readmissions?

A Substandard inpatient care
B Unstable therapy at patient discharge
C Inadequate post-discharge care
D All of the above are potential causes for preventable hospital readi

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-642 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF GLUCOSE MANAGEMENT AND COORDINATION OF VARIOUS SERVICE LINES TO OPTIMIZE GLYCEMIC CONTROL WITHIN AN ACUTE HOSPITAL SETTING

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Purpose Hyperglycemia in hospitalized patients presents unique challenges that stem from variations in nutritional status and the practical limitations of point of care (POC) glucose monitoring. Hyperglycemia in non-critically ill patients (with or without diabetes), irrespective of its cause, is associated with poor outcomes and is often overlooked and inadequately treated. Glucose management at Presence Saint Joseph Medical Center (PSJMC) has become more complicated due to the implementation of patient meals on demand. The use of sliding scale insulin only regimens is common for glycemic management in non-critically ill patients and the current standard of care for glycemic management is inconsistent throughout PSJMC. The purpose of this study is to develop a multidisciplinary glucose management service to optimize glycemic control. Methods This is a single-center, observational study in parallel with performance improvements aimed at utilizing a multidisciplinary approach to optimizing glycemic control. A retrospective chart review was conducted from September 2012 and December 2012 in non-critically ill, post-operative patients located on the orthopedic unit (7W). Current management of glycemic control was evaluated by examining the sequence and difference in time between insulin administration, POC glucose monitoring, and meal delivery. Patients ≥18 years of age that are diabetic requiring meal time insulin therapy or non-diabetic experiencing hyperglycemic episodes were eligible for inclusion. Following implementation of the blood glucose management protocol, eligible patients on 7W will be monitored to assess overall glycemic control for a one month period. Various in-services regarding insulin education and an overview of the protocol will be provided to all staff affected by the initiative. Data variables collected for analysis include: patient demographics (age, gender, weight), indication for hospital admission, insulin types, mean fasting and pre-prandial blood glucose levels, hypoglycemic episodes, and length of stay Results Data collection currently in process. Conclusion To be presented

Learning Objectives:

Identify current recommendations of glycemic targets in hospitalized patients

Select appropriate insulin types and regimens for optimal inpatient glycemic control

Self Assessment Questions:

What is the current ADA recommended target random blood glucose level for non-critically ill patients?

A <180 mg/dL

B: <150 mg/dL

C: <140 mg/dL

D: <110 mg/dL

Most hospitalized patients with hyperglycemia receive subcutaneous insulin therapy. What is the ADA and AACE preferred method for prescribing subcutaneous insulin?

A Correction-dose insulin (Sliding scale insulin)

B Basal-bolus insulin

C A only

D A and B

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-301 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND TOLERABILITY OF INTRAVENOUS IRON THERAPY WITH IRON SUCROSE VERSUS IRON GLUCONATE IN ANEMIC PATIENTS WITH CHRONIC KIDNEY DISEASE NOT ON DIALYSIS

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Purpose: Anemic patients with chronic kidney disease (CKD) are at risk for significant adverse events. Iron deficiency impairs the erythropoiesis needed to resolve anemia. Iron supplementation should be given to maintain serum ferritin >100 ng/mL and transferrin saturation (TSAT) >20% in non-dialysis CKD (ND-CKD) patients. Both intravenous (IV) iron sucrose and IV iron gluconate are used at the Louis Stokes Cleveland Veterans Affairs Medical Center. Safety concerns for both products include serious hypersensitivity reactions, significant hypotension, and iron overload. No study has directly compared these two IV iron formulations in ND-CKD patients. The purpose of this study is to compare the efficacy and tolerability of IV iron sucrose to IV iron gluconate in anemic ND-CKD patients. Methods: A retrospective chart review will compare efficacy and tolerability of two formulations of IV iron in the treatment of anemia. The primary objective is to compare the percent of change in TSAT levels between groups from baseline to the end of the study time frame. Secondary objectives include tolerability, changes in Hgb level, ferritin level, and erythropoiesis-stimulating agent dose requirements. Patients will be included if they have CKD, TSAT < 20%, and an order for IV iron sucrose or IV iron gluconate (sodium ferric gluconate) between January 2007 and September 2012. Patients will be excluded if they have myelodysplastic syndrome or a GI bleed, or if they received hemodialysis, active chemotherapy treatment, or active treatment for infection while receiving IV iron therapy. The study time frame starts from 60 days prior to beginning the first iron dose and ends within 90 days after the last iron dose. Tolerability and safety will be determined from any post-infusion complications or patient complaints.

Results and Conclusions: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain when iron repletion is necessary for the treatment of anemia.

Identify iron repletion recommendations in chronic kidney disease for patients not on dialysis.

Self Assessment Questions:

Which of the following require sufficient iron stores in the setting of anemia?

A Blood transfusion

B: Kidney function

C: Erythropoiesis

D: Platelet production

Which of the following is a threshold for iron supplementation according to the KDOQI guidelines?

A Transferrin saturation <20%

B Serum iron <60 mcg/dL

C Ferritin >600 ng/mL

D Hemoglobin <12 g/dL

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-302 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING CURRENT PERCEPTION AND BARRIERS TO EFFECTIVE TRANSITION OF CARE COMMUNICATION BETWEEN COMMUNITY AND HOSPITAL PHARMACISTS

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Purpose: Lack of communication during patient care transition continues to be a barrier in providing care after a patient is discharged from the hospital. Emphasis has been given to performing medication reconciliation during admission, transfer, and discharge of patients to or from health care facilities, but little research has been conducted to demonstrate how the discharge medication reconciliation list is shared with the next pharmacy provider after discharge. The hospital discharge instructions outlining the transitionary plan of care are not routinely shared with the next pharmacist provider. The purpose of this survey is to evaluate the perception of community pharmacists and the possible barriers with effective transition of care communication. It is important for community pharmacists to have access to pertinent medical record information to insure patients are getting appropriate care as they transition out of the hospital. With meaningful use requirements for health information, the community based pharmacist now has the potential to access critical information about their patients that may improve monitoring of medication effects and help in preventing adverse medication reactions, safety, and improving patient outcomes. The surveys intent is to help determine what type of information would be most helpful and how best to provide the information to the community pharmacist.□Methods: A literature search was conducted on transition o care between hospital pharmacist and community pharmacist. Surveys were distributed to community pharmacists and long term-care pharmacists November 1st with a goal of at least 100 surveys returned by December 31st.□Results/Conclusion: Data analysis is currently being conducted, and the results of this survey will be used to help understand the needs and barriers that exist when providing transition of care communication between the community and hospital pharmacists. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the perceived barriers to transition of care from hospital admissions

Identify patient information that would be helpful to communicate to community pharmacists at time of discharge in order to advance safe transition of care post discharge

Self Assessment Questions:

Based on the research presented , what is a perceived barrier to safe from the hospital to the community pharmacists?

A Pharmacists lack of understanding of importance

B: Time

C: Outside scope of practice

D: None

Based on the research presented, what information would be helpful to communicate to community pharmacists at time of discharge that is not currently being shared?

A Labs

B New prescriptions

C Verbal notice from patient or family member

D Patient's insurance information

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-792 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A PHARMACIST MEDICATION-RELATED QUALITY MEASURE COMPETENCY AND PERFORMANCE REPORTING SYSTEM

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Purpose:□The purpose of this project is to create tools that will enable pharmacists to advance performance on select medication-related quality metrics (MQM). The primary objectives are two-fold: the development of pharmacist competency, specifically knowledge of metric inclusion/exclusion criteria, evidence supporting metrics, ability to utilize available clinical decision support tools, and expectations of pharmacist practice; and the development of reporting mechanisms, namely reports of individual pharmacist performance.□□Methods:□Initially, a literature search was conducted to identify best practices for the development of pharmacist competencies. Next, various departmental and external metrics were evaluated and stratified based on current hospital performance, reimbursement considerations, internal initiatives, and other guiding factors. Key MQM were identified based on institutional need, and were selected in a resident-led meeting with department leadership. Subsequently, description, rationale, inclusion and exclusion criteria, and other pertinent details for each key measure were procured from each measure stewards specifications manual. Afterward, an additional literature search was conducted to identify data which support the application of selected MQM in the specified patient populations. Curren clinical decision support tools and processes surrounding these measures at the UW Hospital were also identified and documented. The information gathered in the proceeding process will be used to develop a case-based competency program. Competency structure will be vetted through the departmental training and education committees. Next, interactive e-learning software will be employed to develop the competency and, once deployed, tracked through the institutions online learning management system. Inpatient pharmacists will be polled upon completion to measure confidence in their knowledge of MQM and satisfaction with competency. Reporting parameters from the electronic medical record reflecting pharmacist performance will be identified with the institutions data analysis, information technology, and quality improvement teams. Once completed, reports will be used to conduct a retrospective analysis of pharmacist performance pre- and post-competency implementation.

Learning Objectives:

Describe the role pharmacists can play in optimizing institutional performance on medication related quality metrics.

Explain the benefits of real-time reporting of pharmacist performance on key quality metrics.

Self Assessment Questions:

Which of the following performance standards are included in the FY 2015 Hospital Value Based Purchasing Program?

A HF-1: Heart Failure Discharge Instructions.

B: SCIP- 4: Cardiac Surgery Patients with Controlled 6AM Postopera

C: HBIPS-5: Patients Discharged on Multiple Antipsychotic Medicatio

D: MACH-3: Hairy Patient's Chest Shaved Before AED Pad Applicati

Which of the following is the best strategy for promoting pharmacists knowledge of quality metrics:

A Case-based teaching, interactive learning exercises, competency

B A department-wide inservice given once a year when CMS Value-I

C Red, yellow, and green colored dashboards emailed to staff and di

D Holding a pizza party for breaking even in the Value-Based Incenti

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-643 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF FACTORS INFLUENCING RESIDENCY APPLICANT SELECTION OF A SPECIFIC PGY1 RESIDENCY PROGRAM

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Purpose: There is a growing body of literature evaluating factors that are most influential to pharmacy and medical residency candidates when selecting a program. However, there is limited amount of literature specifically evaluating factors that influence pharmacy residency applicant selection of a specific postgraduate year one (PGY1) program. The objectives of this study are to assess the factors that influence residency applicant selection of a specific PGY1 pharmacy program and to determine any differences in factor consideration between current PGY1 residents and pharmacy students in their last professional year. Methods: This study is has received Purdue University Institutional Review Board approval. In January 2013 surveys will be e-mailed to pharmacy students in their last professional year at Accreditation Council for Pharmacy Education (ACPE) accredited colleges of pharmacy and current PGY1 pharmacy residents. An electronic cover letter with the request to complete the survey will be e-mailed to a representative at each college of pharmacy and PGY1 residency program director as listed on their respective accrediting body websites. It will be the responsibility of each contact person to forward the survey to their respective students or residents. Data collection will close at the end of January 2013. All surveys will be anonymous, confidential and will be completed electronically utilizing Qualtrics software. The survey will be separated into two parts focusing on demographic information and the ranking and rating of factors influencing program selection using a Likert based scale. Voluntary completion of the survey will indicate consent. Results and Conclusions: Data collection is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the top three factors found to be most influential to pharmacy residency applicants in the selection of a specific postgraduate year one program in 1988 and in 2013.

Identify the top three reasons why Doctor of Pharmacy candidates do not pursue a postgraduate year one residency.

Self Assessment Questions:

According to a similar study by Senst et al., what factor was found to be the most influential to pharmacy residency applicants in the selection of a specific postgraduate year one program?

A Accreditation status
B: Reputation as a good learning program
C: University teaching affiliation
D: Types of medical services offered

Which of the following was the top reason why Doctor of Pharmacy candidates did not pursue a postgraduate year one residency?

A Already accepted a job
B Geographic restrictions
C Academic burnout
D Family obligations

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-644 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE CLINICAL BENEFITS OF IMPLEMENTING A URINARY TRACT INFECTION TREATMENT GUIDELINE IN THE EMERGENCY DEPARTMENT

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Purpose: Fluoroquinolone resistance among common urinary tract infection (UTI) pathogens has been increasing on a global level. In the literature, academic health care facilities have documented increased resistance rates with fluoroquinolones. This increased resistance is now presenting in community hospitals around the country. The objective of this study is to assess the effect of implementing empiric UTI antimicrobial guidelines in the emergency department (ED) on treatment outcomes. Methods: A data surveillance system utilized at Saint Joseph Medical Center was used to identify patients admitted to the ED who had positive urine cultures showing resistance to fluoroquinolones from July 2012 through September 2012. Exclusion criteria include pregnancy and age under 18 years. In addition to culture and sensitivity data, the following patient specific information has been collected: age, gender, drug allergies, white blood cell count, occurrence of fever, results of urinalysis, renal function markers, empiric antimicrobial agent initiated prior to culture results, and antimicrobial agent selected after the final sensitivity results. Based on the retrospective data, ED treatment guidelines were developed to promote appropriate empiric UTI antimicrobial therapy. Prior to guideline implementation, the ED physician staff received instruction on the proper use of the guideline and education regarding fluoroquinolone resistance at our institution. Following guideline implementation, physician prescribing habits will be analyzed over a three-month period. Initial choice of antibiotic, culture and sensitivity reports, antibiotic changes made based on sensitivity results, and length of antibiotic therapy will be collected for analysis. The primary objectives of this study will be to determine if the implementation of an empiric UTI treatment guideline results in more accurate initial use of antimicrobial therapy, as well as, a shortened duration of UTI treatment. Results/Conclusion: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe appropriate antibiotic recommendations based on the most recent guidelines for cystitis and pyelonephritis.

Recognize potential clinical benefits of implementing empiric UTI antimicrobial guidelines.

Self Assessment Questions:

According to the most recent guidelines, what would be the most appropriate empiric antimicrobial for a 33 year old female with uncomplicated cystitis, a penicillin allergy, and normal renal function?

A Ciprofloxacin 250mg po BID
B: Nitrofurantoin 100mg po BID
C: Cephalexin 500mg po QID
D: Levofloxacin 250mg po daily

Overutilization of fluoroquinolones for the empiric treatment of UTIs may result in which of the following:

A Decreased incidence of empiric treatment failure
B Decreased fluoroquinolone resistance among urinary pathogens
C Increased duration of antimicrobial therapy
D Increased incidence of appropriate initial therapy for UTIs

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-303 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING THE PERCEIVED FACILITATORS AND BARRIERS TO PHARMACISTS INTERVENING ON INAPPROPRIATE BENZODIAZEPINE USE IN THE ELDERLY

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Objective: To identify why pharmacists may not intervene on inappropriate benzodiazepine prescriptions, per the updated Beers Criteria. More specifically, to use the theory of planned behavior to identify the facilitators and barriers to pharmacists intervening on inappropriate benzodiazepine use in the elderly and to determine the relationship between the perceived facilitators and barriers and pharmacist demographics, experience, and work environment.□□Methods: The population for this cross-sectional descriptive analysis consists of all members of the Pharmacy Society of Wisconsin (PSW) who are listed in the independent pharmacists email list serve and all UW-Madison fourth year community pharmacy preceptors. Data collection will occur through a self-administered anonymous online survey. Descriptive statistics and scale reliability will be calculated for each of the 4 TPB scales (attitude, subjective norm, perceived behavioral control, and intention). Linear regression will be used to examine the relationship between the perceived facilitators and barriers, and pharmacist demographics, experience, and work environment.□□Results: Will be presented at the Great Lakes Pharmac Resident Conference.

Learning Objectives:

Identify the perceived barriers to pharmacists intervening on inappropriate benzodiazepine use.

Identify the perceived facilitators to pharmacists intervening on inappropriate benzodiazepine use.

Self Assessment Questions:

Pharmacists surveyed were least confident in their ability to:

A Identify inappropriate benzodiazepine use

B: Educate elderly patients on the risks of benzodiazepine use

C: Recommend an appropriate benzodiazepine tapering schedule

D: Recommend an appropriate alternative therapy to an inappropriate

When dispensing a new benzodiazepien prescription the pharmacists surveyed had the lowest intention to?

A Gather information from the patient to determine why the medicati

B Gather information from the patient to find out how he or she was i

C Educate the patient on the possible adverse effects (e.g.cognitive

D Recommend a change in therapy when the benzodiazepine is inap

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-793 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF THE EFFECTIVENESS OF VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS WITH ENOXAPARIN BETWEEN OBESE AND NON-OBESE PATIENTS

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Purpose:□Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), is a major concern for hospitalized patients. A difference in VTE incidence may exist between obese versus non-obese hospitalized patients who received standard VTE pharmacologic therapy at recommended prophylactic doses. Enoxaparin, a low-molecular-weight heparin, is approved by the United States Food and Drug Administration for DVT prophylaxis among high risk hospitalized patients. Consensus regarding enoxaparin prophylactic doses in obese patients is lacking. Recent studies have shown that standard recommended prophylactic enoxaparin doses may not be enough to prevent VTE in obese patients. A difference in VTE incidence may exist between obese versus non-obese hospitalized patients who receive the standard VTE prophylactic doses. The purpose of this retrospective research is to describe enoxaparin dosing strategies used in obese patients and to compare the incidence of venous thromboembolism between obese and non-obese hospitalized patients who received standard prophylactic enoxaparin doses.□Methods:□Patients who were admitted to Parkview Regional Medical Center, Parkview Hospital, or Parkview Orthopaedic Hospital and received enoxaparin 30 mg twice daily or 40 mg once daily for VTE prophylaxis will be included in this retrospective cohort study. Patients who developed VTE between day 1 and 90 will be identified. Patients wil be classified into 3 groups based on body mass index (BMI): Group 1 (non-obese): BMI < 25(kg/m2), Group 2 (overweight): BMI ≥ 25 (kg/m2) but < 30 (kg/m2), Group 3 (obese): BMI ≥ 30 (kg/m2). The data will be analyzed to determine the incidence of VTE between day 1 and 90 of hospitalization as the outcome. Baseline characteristics gathered will include: patient age, sex, weight (kg), height (cm), serum creatinine, doses of enoxaparin given, length of stay, and unit of admission.□□Results:□Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the risk for VTE in obese and non-obese patients.

Identify which enoxaparin dosing strategy is best supported by clinical literature.

Self Assessment Questions:

Which of the following is the indicated enoxaparin dose for VTE prophylaxis in medical patients with normal renal function?

A Enoxaparin 40 mg subcutaneously twice daily

B: Enoxaparin 30 mg subcutaneously twice daily

C: Enoxaparin 30 mg subcutaneously once daily

D: Enoxaparin 40 mg subcutaneously once daily

Which enoxaparin dosing strategy for VTE prophylaxis in obese patients is most strongly supported by clinical literature?

A The dose is based on body weight

B The dose is based on body surface area

C The dose is the same as that used for non-obese

D There is no consensus regarding the dose in obese patients

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-304 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VENOUS THROMBOEMBOLISM PROPHYLAXIS IN TRAUMATIC BRAIN INJURY: DOES TIMING OF PROPHYLAXIS PLAY A ROLE?

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Purpose: Patients with traumatic brain injury (TBI) are at higher risk for venous thromboembolism (VTE) events. The current guidelines for the management of severe TBI from the Brain Trauma Foundation recommend that both mechanical and pharmacological prophylaxis should be used in TBI patients, but fail to provide any recommendations on timing of pharmacological prophylaxis. There is insufficient evidence regarding the optimal timing of prophylaxis. The objective of this study is to determine if early (≤ 48 hours) or late (> 48 hours) pharmacologic VTE prophylaxis is associated with a decreased incidence of VTE. Methods: This retrospective study will evaluate patients admitted to the surgical intensive care unit (SICU) with TBI who received pharmacological VTE prophylaxis from January 2009-September 2012. A list of patients will be identified from the health systems electronic medical record. The primary objective of the study is to determine the incidence of thrombosis (DVT and PE). Secondary outcomes include the incidence of intracranial hemorrhage expansion, timing of thrombosis, hospital and ICU length of stay (LOS), duration of mechanical ventilation, and in-hospital mortality. Inclusion criteria are patients ≥18 years old with TBI admitted to the SICU and started on pharmacologic VTE prophylaxis who are not pregnant, with no intracranial pressure monitor, no coagulopathy, or not on anticoagulation prior to admission. Data to be collected include patient demographics, past medical history, lab values, type of intracranial injury, time to and type of pharmacologic prophylaxis, incidence of hemorrhage expansion, development of new intracranial hemorrhage, hospital/ICU LOS, incidence of thrombosis, mechanical ventilation duration, and in-hospital mortality. Data will be analyzed with the statistical software SPSS version 18.0 or later. All P values < 0.05 are considered statistically significant. The study has been approved by the Institutional Review Board. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the pathophysiology of hypercoagulability in patients with traumatic brain injury.

Discuss outcomes in patients who received early vs. late venous thromboembolism prophylaxis in traumatic brain injury.

Self Assessment Questions:

Brain and Trauma Foundation guidelines for the in-hospital management of TBI recommend pharmacologic VTE prophylaxis with the following agent(s):

A Heparin
B: Low-molecular weight heparin
C: Fondaparinux
D: A and B

Which of the following is a contraindication for starting pharmacologic VTE prophylaxis?

A Traumatic Brain Injury
B Active bleeding
C Pregnancy
D Protein-C deficiency

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-305 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PAIN MANAGEMENT AGREEMENT AND THE IMPACT ON ABERRANT BEHAVIORS IN A VETERAN POPULATION

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Chronic pain is one of the most common reasons for medical visits and the number of opioid prescriptions continues to rise tremendously. Aberrant drug behavior is a behavior that occurs outside the boundaries of an agreed treatment plan and can include diversion, misuse, and abuse. The 2009 American Pain Society Opioid Guidelines recommends utilizing written pain agreements, risk assessment tools, such as the Screener and Opioid Assessment for Patients with Pain (SOAPP), and random urine drug screens (UDS) to reduce the risk of aberrant behaviors for patients prescribed opioids for chronic pain. However, there is a paucity of published evidence that demonstrates these methods significantly reduce aberrant behaviors. Currently, at Jesse Brown VA Medical Center (JBVAMC), the pain clinic is the only clinic to routinely implement all three methods. A retrospective chart review will be conducted of patients age 18 years or older with chronic lower back pain who were prescribed opioids from February 2010 to February 2012 and followed by either pain or primary care clinic at JBVAMC. Data that will be collected include if a pain agreement was signed, result and date of SOAPP questionnaire if completed, UDS test dates and results if ordered, opioid refill date compared to due date, and Emergency Department or Urgent Care Clinic visits for the purpose of opioid refill. The primary objective is to determine if there is a difference in the number of early (≥5 days) opioid refills attempted by patients who are followed by pain clinic versus patients followed by primary care. Patients will be excluded if they are on opioid therapy for acute pain, on chronic opioids for pain other than lower back pain, or are on chronic opioids prescribed by anyone other than primary care or pain clinic. Results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Describe aberrant behaviors and be able to identify examples.

Discuss methods that can potentially reduce the risk of aberrant behaviors.

Self Assessment Questions:

Which of the following is an example of an aberrant behavior for a patient prescribed chronic opioids?

A Urine toxicology tests positive for prescribed opioids
B: Urine toxicology tests positive for illicit substances
C: Urine toxicology tests negative for prescribed opioids
D: B & c

Which of the following is a method recommended for reducing the risk o aberrant behaviors?

A Informing a patient that they need to provide a urine sample in thre
B Not performing random urine toxicology tests
C Having a written pain agreement between the provider and the pat
D Providing early refills of prescribed opioids

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-645 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF OSMOTIC LAXATIVES AS A PRE-OPERATIVE BOWEL PREPARATION PRIOR TO GASTROINTESTINAL SURGERY IN INFANTS POPULATION - DRUG USE EVALUATION

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Purpose: Cleveland Clinic currently uses several bowel preparations in infants including polyethylene glycol-electrolyte solution (PEG-ES) and magnesium citrate (MC). Although the dosing, safety and efficacy of these solutions in adults are well defined, there is limited data to support their safety and efficacy in infants. The electrolytes contained in these solutions are at lower concentrations than serum to prevent absorption but there is concern for an increase in adverse events due to the infants altered gastrointestinal integrity. Therefore, the purpose of this drug use evaluation is to describe the safety and efficacy of PEG-ES and MC as a pre-operative bowel preparation in infants. □□Methods: Retrospective chart review will be conducted to evaluate infants in the Childrens Hospital at Cleveland Clinic who received PEG-ES or MC. The primary safety objective is to determine the change in serum electrolyte concentrations after the use of PEG-ES or MC and assess the number of patients with gastrointestinal perforations intra-operatively. The primary efficacy objective is to assess bowel clearance after receiving PEG-ES or MC and to determine time to clearance of infants bowel. Patients are included if they received PEG-ES or MC. They will be excluded if they received both PEG-ES and MC or if their age is greater than 12 months at the time of surgery. Data will be collected regarding demographics (gender, post conceptual age at birth, post natal age at surgery, weight, type of surgical procedure, diagnosis and receipt of total parenteral nutrition), administration time, total laxative volume administered, serum electrolytes (sodium, potassium, chloride, bicarbonate, magnesium), blood glucose, adequacy of preparation and if gastrointestinal perforation occurred. Descriptive statistics will be used to analyze data.□□Results and conclusions: Data collection and analysis are currently being conducted; final results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

List the various electrolytes in polyethylene glycol-electrolyte solution and magnesium citrate solution

Outline the research design and methods

Self Assessment Questions:

How much sodium is in a liter of polyethylene glycol-electrolyte solution:

A 50 mmol
B: 100 mmol
C: 125 mmol
D: 200 mmol

All of the following electrolytes are ingredients in polyethylene glycol-electrolyte solution except:

A Sulfate
B Potassium
C Magnesium
D Peg 3350

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-646 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF PHARMACISTS KNOWLEDGE NECESSARY TO PROVIDE COMMUNITY-BASED PHARMACOGENOMIC INTERVENTIONS

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Purpose: Pharmacogenomics may be utilized to improve drug efficacy and safety as literature has demonstrated that genetic variability influences drug response. It has been proposed that pharmacogenomic interventions could be incorporated into many existing medication therapy management (MTM) programs. Pharmacogenomics is an underutilized concept in the community pharmacy setting. In this setting, pharmacists have the unique ability to capitalize on the use of genetic testing to promote positive therapeutic outcomes; however one of the barriers to implementation is pharmacists lack of knowledge. The primary objective of the study is to assess pharmacists knowledge necessary to provide community-based pharmacogenomic interventions. Secondary objectives include determining if a relationship exists between demographic data and pharmacogenomic knowledge as well as identifying educational needs of community pharmacists. □□

Methods: An invitation to complete a brief web-based survey will be distributed electronically to community pharmacists practicing in the United States through distribution lists. The survey will be comprised of 19 multiple-choice knowledge-based questions and demographic questions. The survey will be available for four weeks and will be distributed a total of three times at one week intervals. All surveys completed by pharmacists currently employed in the community setting will be evaluated. No identifiers will be collected as part of the electronic survey. The data will be analyzed by descriptive statistics and multivariate logistic regression analysis.□□Results/Conclusions: To be presented.□□Implications: This research may help to streamline the educational needs of pharmacists that would be required to identify, interpret and counsel on pharmacogenomic data if a service were implemented in the community setting.

Learning Objectives:

Describe the barriers to the use of pharmacogenomics in pharmacy practice.

Identify which medications require pharmacogenomic testing.

Self Assessment Questions:

According to a study conducted by McCullough KB, Formea CM, Berg KD, et.al, regarding pharmacists educational pharmacogenomic needs, approximately what percentage of pharmacists believes they are cap

A 12%
B: 19%
C: 26%
D: 33%

Which of the following medication requires genetic testing prior to prescribing?

A enfuvirtide
B maraviroc
C raltegravir
D zidovudine

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-647 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF QTC INTERVAL SCREENING IN PATIENTS RECEIVING METHADONE FOR MAINTENANCE THERAPY OR CHRONIC PAIN MANAGEMENT

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Purpose: Methadone is a long-acting agent with several mechanisms of action that include opioid receptor agonism, N-methyl-D-aspartic acid (NMDA) receptor antagonism, and serotonin and norepinephrine reuptake inhibition. It is approved for detoxification or maintenance therapy for opioid dependence and treatment of moderate to severe chronic pain. Methadone is associated with the risk of QTc prolongation and the development of torsade de pointes (TdP). Thorough assessmen of past medical history, risk factors, and interacting medications prior to and during methadone therapy are necessary for patient safety. The purpose of this study is to evaluate QTc interval screening and the incidence of hospitalizations for arrhythmias related to methadone use.□□Methods: This study is a retrospective chart review of patients aged 18 years or older initiated or previously maintained on oral methadone in an outpatient setting for three months or longer for maintenance therapy or chronic pain. A patient list from February 1, 2009 to August 30, 2012 will be generated from the Computerized Patient Record System (CPRS) based on patients receiving methadone tablets from the Jesse Brown VA Medical Center (JBVAMC) Outpatient Pharmacy or those enrolled in the Drug Detoxification Treatment Clinic (DDTC). Data to be analyzed will include, but not be limited to, past medical history, relevant laboratory values, doses of methadone, dates of initiation, interacting medications, dates of each ECG, QTc interval at each ECG, interventions based on ECG results, and dates and reason c hospitalizations related to methadone use. The primary endpoint is the frequency of ECG monitoring as described by the most recent guidelines and the incidence of arrhythmia-related hospitalizations secondary to methadone use. □□Results/Conclusions: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Outline the current ECG monitoring recommendations for patients initiated on chronic methadone therapy

Identify common drug-drug interactions and risk factors that may contribute to QTc prolongation

Self Assessment Questions:

According to the current ECG monitoring recommendations, which of the following QTc interval ranges would require a clinical intervention such as discontinuing methadone, decreasing the dose, eliminat

A QTc ≤ 350 ms

B: QTc 350-400 ms

C: QTc 400-440 ms

D: QTc ≥ 500 ms

Which of the following oral medications may increase the risk of QTc prolongation?

A Glipizide

B Amiodarone

C Tamsulosin

D Clopidogrel

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-794 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

VINCRISTINE DOSE MODIFICATIONS DURING CONCOMITANT FLUCONAZOLE PROPHYLAXIS IN ADULTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Background: Vincristine is a vinca alkaloid utilized in the treatment of acute lymphoblastic leukemia (ALL), and is associated with dose-limiting side effects, such as neurotoxicity. Vincristine is metabolized extensively by cytochrome P450 3A4 (CYP3A4). National Comprehensive Cancer Network (NCCN) guidelines recommend fluconazole or amphotericin B for antifungal prophylaxis, and recommend against the use of posaconazole, voriconazole, or itraconazole due to their strong CYP3A4 inhibition. Fluconazole is a less potent CYP3A4 inhibitor; however, risks for interactions may exist. Previous studies have provided insufficient data to evaluate the safety of using fluconazole prophylaxis during vincristine-containing induction chemotherapy in adults with ALL.□□Objectives: The primary objective is to evaluate the frequency of dose modifications of vincristine when used in combination with fluconazole. Secondary objectives are to calculate the average dose reductions of vincristine, characterize the rate of vincristine-related adverse events, and evaluate the time to dose modifications or adverse events.□□Methods: This is a retrospective chart review of adult ALL patients to evaluate the safety of using fluconazole in combination with vincristine during induction chemotherapy. Patients must be scheduled to receive at least four doses of vincristine during induction. Patients are excluded if they received strong CYP3A4 inhibitors/inducers or had hepatic dysfunction, defined as a total bilirubin >3 mg/dL, at the start of induction. Data to be collected includes: demographics (gender, height, weight, race), chemotherapy regimen, serum creatinine, total bilirubin, serum sodium, fluconazole dose, vincristine dosing information (date and day of intended and administered doses), other azoles administered, and adverse events (autonomic and peripheral neurotoxicities). The frequency of dose modifications will be analyzed using the chi-square test. Nominal data will be analyzed using chi-square or Fishers exact test, continuous data with students t-test, and time-to-event with Kaplan Meier.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall therapies recommended for antifungal prophylaxis during vincristine-containing induction chemotherapy

Recognize the potential interaction between vincristine and azoles

Self Assessment Questions:

Which azole is recommended by NCCN guidelines for antifungal prophylaxis during vincristine-containing induction chemotherapy?

A Posaconazole

B: Voriconazole

C: Fluconazole

D: Itraconazole

Which cytochrome P450 enzyme is responsible for the potential interaction between azole antifungals and vincristine?

A Cyp3a4

B Cyp2d6

C Cyp1a2

D Cyp2c19

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-306 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF EXTENDED INFUSION PIPERACILLIN/TAZOBACTAM IN PEDIATRICS

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Background: In 2011, our standard piperacillin/tazobactam (PT) dosing in children at Riley Hospital for Children at Indiana University Health was changed from a traditional infusion of 84.4 mg/kg IV every 6 hours, infused over 30 minutes to an extended infusion piperacillin/ tazobactam (EIPT) of 112.5 mg/kg IV every 8 hours, infused over 4 hours in an effort to optimize antibiotic dosing and clinical outcomes. Improved clinical cure with EIPT has been demonstrated in adults, but has not been demonstrated in children.□□Purpose: To compare efficacy and safety outcomes in pediatric patients receiving traditional infusion PT vs. EIPT dosage regimens. □□Methods: This is a retrospective cohort study of patients aged one month to 17 years who received traditional infusion PT or EIPT between April 1, 2010 and March 31, 2012. Patients will be included if they had a documented gram-negative infection and received either PT dosage regimen for greater than 48 hours. Patients will be excluded if prior to receiving their dosage regimen they received another PT dosage regimen, received more than one dose of a different antimicrobial with gram-negative activity, experienced inadequately treated gram positive or fungal pathogens, were cared for in the neonatal ICU, or received any type of renal replacement therapy. The primary outcome is 21-day clinical cure. Secondary outcomes are 30-day mortality, and safety outcomes such as renal dysfunction and development of leukocytopenia or neutropenia.□□Results/Conclusion: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe pharmacokinetic and pharmacodynamic (PK/PD) properties which can be utilized to optimize dosing of piperacillin/tazobactam (PT).

Identify an extended infusion piperacillin/tazobactam (EIPT) dosage regimen for a pediatric population.

Self Assessment Questions:

Which PK/PD property is associated with efficacy of -lactam antibiotics and can be utilized to optimize dosing of piperacillin/tazobactam (PT)?

A Peak/MIC

B: Time > MIC

C: Auc/mic

D: Time > AUC

Which of the following is an appropriate EIPT dosage regimen, based on total piperacillin/tazobactam, for a pediatric patient?

A PT 84.4 mg/kg IV every 6 hours infused over 30 minutes

B PT 112.5 mg/kg IV every 8 hours infused over 30 minutes

C PT 84.4 mg/kg IV every 6 hours infused over 4 hours

D PT 112.5 mg/kg IV every 8 hours infused over 4 hours

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-307 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACY STUDENT SELF-PERCEPTION OF WEIGHT AND RELATIONSHIP TO COMFORT IN LIFESTYLE MODIFICATION COUNSELING

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Purpose: Lifestyle modifications are important for both prevention and management of diseases such as hypertension, diabetes and dyslipidemia. Healthcare providers are essential in facilitating patients lifestyle changes including advocating for a healthy diet and encouraging regular physical activity. Pharmacists are positioned to provide lifestyle counseling and in turn affect weight management of patients; pharmacists are willing to fill this role. However healthcare providers perceptions of their own weight can affect their confidence in lifestyle modification counseling. The primary objective of this study is to determine the accuracy of self-perceptions of weight for pharmacy students and how this changes throughout pharmacy education.□□Methods: This prospective, observational, cohort study was approved by the appropriate Institutional Review Board. Eligible participants include all first, second, and third professional year pharmacy students at Butler University College of Pharmacy and Health Sciences who have previously completed a health screening at Healthy Horizons. Data collection includes weight and height to calculate body mass index (BMI) and also includes a survey. The survey includes relevant questions to ascertain the participants self-perception of body weight using BMI categories (underweight, normal, overweight, and obese) which will be compared to the calculated BMI to determine the accuracy of participants self-perception. Accuracy of self-perception of weight will be compared to previously collected data from a health screening. Each student will serve as their own control. Questions included will also be used to evaluate the participants comfort in lifestyle modification counseling.□□Results/Conclusion: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the importance of lifestyle modification counseling for the prevention and management of certain disease states.

Describe the potential barriers to lifestyle modification counseling.

Self Assessment Questions:

Which of the following is/are important components of lifestyle modification counseling?

A Dietary modifications

B: Physical activity

C: Medications

D: A and B

Barriers to lifestyle modification counseling include:

A Self-perception of weight of provider

B Socio-economic status

C Time constraints

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-648 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOKINETICS OF AMINOGLYCOSIDES AND VANCOMYCIN IN PATIENTS WITH SUBARACHNOID HEMORRHAGE

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Background: Patients with subarachnoid hemorrhage (SAH) frequently receive broad-spectrum antimicrobial therapy due the common complications associated with SAH such as fever and infection. SAH patients tend to be hyperdynamic from a cardiovascular standpoint, owing primarily to the nature of the physiologic response to SAH and the frequent use of vasopressors and fluids for the treatment of cerebral vasospasm (so-called Triple H therapy). A similar hyperdynamic response has been demonstrated in patients with traumatic brain injury (TBI), which has also been linked with elevations in creatinine clearance (compared to baseline) and drug clearance. Currently, no such data exists for patients with SAH. We hypothesize that like TBI, patients with SAH also experience augmented renal clearance which significantly alters antimicrobial pharmacokinetic parameters impacting the probability of achieving therapeutic drug concentrations of renally-cleared antimicrobials like aminoglycosides and vancomycin.

Purpose: The purpose of this study is to determine the pharmacokinetic parameters of aminoglycosides and vancomycin in SAH patients and determine the impact of SAH and Triple H therapy on creatinine clearance. Methods: Part I of this study is a retrospective, electronic chart review of patients admitted to the University of Kentucky Medical Center with SAH between July 2008-December 2012 who received aminoglycosides and/or vancomycin therapy. Pharmacokinetic parameters such as volume of distribution, half-life, elimination rate constant, and estimated creatinine clearance will be estimated by utilizing plasma drug concentrations obtained via therapeutic drug monitoring and routine monitoring. Part II of this study is a prospective evaluation of the measured creatinine clearance (via 24-hour collection) in SAH patients. Results/Conclusions: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Identify the altered pharmacokinetics parameters in patients with subarachnoid hemorrhage.

Recognize further questions regarding the appropriate antimicrobial dosing in subarachnoid hemorrhage patient population.

Self Assessment Questions:

The consequences of augmented renal clearance primarily relate to:

A Suboptimal exposure to drugs

B: Hypotension

C: Hypervolemia

D: Increased elimination half-life

Presence of augmented renal clearance has important implications for all except:

A Antimicrobials

B Low molecular weight heparins

C Renally cleared drugs

D Drugs with measurable clinical endpoints

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-308 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPROPRIATE USE OF INTRAVENOUS ANTIHYPERTENSIVES FOR HYPERTENSIVE CRISIS IN THE EMERGENCY DEPARTMENT

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Purpose: Hypertensive emergencies occur when severe blood pressure (BP) elevations are accompanied by end-organ injury and immediate BP reduction using intravenous (IV) antihypertensive medications is indicated. However, if the BP is elevated without accompanying end-organ injury, termed hypertensive urgency, overly aggressive BP control can lead to the risk of hypotension and adverse effects. Therefore, the use of IV antihypertensive medications for the hypertension without signs of end-organ damage is inappropriate. The purpose of this study is to assess the appropriateness of a bolus IV antihypertensive administration in the emergency department (ED) in order to improve patient outcomes, safety, and unnecessary medication use. Methods: This is a retrospective, cross-sectional pilot study of patients who presented to the Detroit Receiving Hospital ED from January 2011 to July 2012. Eligible patients were ≥18 years old who received at least one IV antihypertensive bolus of either labetalol, enalaprilat, hydralazine metoprolol, or phentolamine. Patients were excluded if they received antihypertensives via continuous infusion. Antihypertensive therapy was deemed appropriate for the following: 1) treatment for a documented hypertensive emergency, or 2) ED evaluation or hospital admission with further workup for a potential hypertensive emergency. Cases were considered inappropriate if patient was directly discharged from the ED, was admitted to the hospital without hypertension (HTN)-related workup or diagnosis, or was admitted for hypertensive emergency without signs/symptoms of end-organ damage. Adverse effects related to treatment were also recorded. Patient information collected includes baseline demographics, home medications, blood pressures, laboratory data, antihypertensive agent(s) used, discharge diagnosis, ED repeat visits within 30 days, and mortality. Results and Conclusion: Results and conclusion to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the use of single doses of intravenous antihypertensives in the emergency department.

Identify potential adverse effects associated with the inappropriate uses of IV antihypertensives.

Self Assessment Questions:

Which of the following best describes an appropriate use of an intravenous antihypertensive bolus in the emergency department?

A Acute management of chronic hypertension

B: Management of hypertensive urgency prior to oral therapy

C: Acute management of elevated BP with hemorrhagic stroke

D: Management of BP elevation secondary to pain or agitation

Which of the following best describes potential adverse effects associated with adverse effects of intravenous antihypertensives?

A Hypotension

B Bradycardia

C Hypoperfusion of autoregulated vascular beds

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-309 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A HOSPITALS VACCINATION RATES AMONG PATIENTS WITH COPD AND ASTHMA

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Purpose: The William S. Middleton Memorial Veterans Hospital monitors vaccination rates of all inpatient and ambulatory care patients. However, an important aspect of vaccination status that is not being monitored is vaccination rates among specific subsets of high-risk patients. Two populations of interest are patients with Chronic Obstructive Pulmonary Disease (COPD) and asthma. The objective of this research project is to determine vaccination rates of yearly influenza and pneumococcal vaccines, including a second pneumococcal vaccine if applicable, in veterans with COPD or asthma. Methods: For this retrospective records review a list of patients with a diagnosis of asthma or COPD will be generated. Computer generated random numbers will be used to select the electronic medical records of up to 400 veteran patients to be reviewed by the study pharmacist. Influenza vaccine rates will be determined from 09/01/2011-09/01/2012 in order to survey at least one year as the influenza vaccine is recommended yearly. Records will also be reviewed to determine if patients ever received a pneumococcal vaccine prior to age 65 and if they received a second vaccination, when applicable. Data abstracted from the electronic medical record includes administration of pneumococcal or influenza vaccines, administration of a second pneumococcal vaccine, age, gender, allergy to either vaccine or vaccine component, asthma or COPD diagnosis, immunocompromised state, and current asthma or COPD medications. Results/Conclusions: This study is still under investigation. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the current estimated vaccination rates for influenza in high-risk patients.

Identify patients who should receive the pneumococcal vaccine.

Self Assessment Questions:

According to the CDC, approximately what percent of high-risk adults aged 18-64 were vaccinated for influenza during the 2011-2012 influenza season?

A 35%

B: 45%

C: 55%

D: 65%

Which of the following patients would be a candidate to receive the pneumococcal vaccine?

A A 66 year old patient who received a pneumococcal vaccine at age

B A 64 year old patient with seasonal allergies who has never receiv

C A 55 year old patient with asthma who last received a pneumococ

D A 45 year old patient with COPD who has never received a pneum

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-310 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF MEASURING SERUM PROCALCITONIN LEVELS ON DURATION OF ANTIMICROBIAL THERAPY IN CRITICAL CARE PATIENTS WITH SUSPECTED PNEUMONIA

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Purpose: Procalcitonin (PCT) is the prohormone precursor to calcitonin. It is produced in response to bacterial endotoxins and the inflammatory mediators interleukin-1, tissue necrosis factor-α, and interleukin-6. Serum PCT levels become elevated in response to bacterial infection and have been shown to correlate with extent and severity of bacterial disease. PCT has been shown to be an effective biomarker in patients with lower respiratory tract infections and sepsis. Randomized controlled trials have demonstrated that PCT-guided antibiotic therapy reduces duration of antimicrobial use compared to conventional treatment. No difference in mortality, length of hospital stay, or rates of infection relapse has been found between standard therapy and PCT-guided therapy groups. The purpose of the study is to determine the impact of monitoring PCT levels on length of antibiotic therapy at Mayo Clinic Health System in Eau Claire, Wisconsin.

Methods: A retrospective review of electronic medical records was conducted on patients admitted to the critical care unit and placed on the institutions pneumonia protocol. Average length of antibiotic therapy was compared between patients prior to and after implementation of a procalcitonin-guided therapy protocol. Severity of disease factors, including age, sputum and blood culture results, need for pressor agents or mechanical ventilation, and white blood cell count upon admission were also compared. A cost analysis was conducted to determine the financial impact of monitoring procalcitonin levels.

Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify disease states in which procalcitonin measurement may be useful to guide clinical decisions regarding antimicrobial therapy.

Discuss the role of procalcitonin in determining duration of antibiotic therapy.

Self Assessment Questions:

For which disease states has procalcitonin been shown to be an effective biomarker to manage antimicrobial therapy?

A Sepsis and endocarditis

B: Sepsis and pneumonia

C: Pneumonia and endocarditis

D: Meningitis and endocarditis

At which of the following procalcitonin levels would it be appropriate to recommend discontinuing antibiotics?

A 0.1 ng/mL

B 0.7 ng/mL

C 1.1 ng/mL

D 1.7 ng/mL

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-311 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PRECEPTOR DEVELOPMENT NEEDS AT A COMMUNITY HOSPITAL

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Background:□ASHP guidelines for accredited residency programs include a provision for preceptor development (PD). Current literature shows the implementation of a preceptor development program (PDP) enhances knowledge, skills, attitudes, and values of preceptors, as well as improvement in practice sites. □□Purpose:□The purpose of this study is to evaluate the preceptor development needs at Franciscan St. Margaret Health (FSMH), a two campus community hospital which is part of the Franciscan Alliance (FA). □□Methods:□An online survey too was used to send a needs assessment to all FSMH PGY-1 resident preceptors, past FSMH residents, and current FA residents. Questions were directed at determining precepting confidence, potential areas for further development, and preferred methods of education. Also, preceptors were asked to rank a variety of PDP topics in order of preference for additional education. □□Results:□Twelve preceptors responded to the survey. Identified areas of improvement included: motivating residents, handling conflicts, having a resident help with daily responsibilities, and decreasing workload. Four past residents who responded to the online survey identified preceptor improvment in: workload balance, teaching critical thinking skills, and how they interact with residents. All six current residents in the FA responded to the online survey; and identified the following important qualities in preceptors: knowledgable, approachable, compassionate, professional, and solid clinical skills. In comparison to identified areas of improvement, assessing professionalism, utilizing technology as a teaching method, and questioning residents effectively were identified as the top three topic priorities for PDP. □□Conclusion:□A PD needs assessment completed by preceptors, and past and current residents at a community hospital was helpful in identifying areas of additional education for preceptors. Identified priorities for PDP include: effective communication skills, utilizing technology, and tailoring to different learning styles. Preceptors and residents will benefit from additional preceptor development, but more importantly so will patient care.

Learning Objectives:

List the preceptor development needs at a community hospital.

Discuss the process of performing a preceptor development needs assessment.

Self Assessment Questions:

Which of the following statements is correct?

A ASHP guidelines do not address preceptor development programs

B: Preceptor development programs can enhance knowledge, skills,

C: Preceptor development programs will decrease workload.

D: Preceptor development programs are not required by ACPE.

Which of the following is an initial step in developing a preceptor development program?

A Hold weekly meetings.

B Implement continuing education requirements.

C Perform a needs assessment.

D Require preceptors to lead topic discussions.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-649 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CREATION OF A CENTRALIZED COMPOUNDING PHARMACY TO REDUCE DEPENDENCE ON OUTSOURCED STERILE AND NON-STERILE PRODUCTS

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Statement of purpose: The purpose of this presentation is to illustrate the steps taken by one health network to implement a centralized sterile and non-sterile compounding pharmacy. Supply chain interruptions, drug shortages, price fluctuations, recent patient deaths due to contaminated sterile compounded products, and impending increases in regulatory involvement have combined to create an uncertain environment for drug procurement. In light of this, many hospitals and health systems are evaluating their current outsourcing arrangements to identify potential opportunities for improved supply chain management as well as greater assurance of drug quality and patient safety. Moving the preparation of sterile and non-sterile compounded products from an external source to an internal operation is a complex process. This presentation will elaborate on one networks approach to creating a centralized compounding pharmacy. Statement of methods: A preliminary internal return on investment analysis was completed to demonstrate the potential for cost savings associated with bringing some currently outsourced sterile products in house. Because of the significant savings opportunity identified and a desire for tighter control over quality assurance, a timeline was created to ensure the project remained a priority and continued to progress. Key stakeholders of the current and future processes were invited to form a multidisciplinary project team. The team recognized during initial discussions that the use of consultant services would help bridge internal knowledge gaps and ensure adequate planning and preparation was undertaken. A request for proposal outlining the networks anticipated needs and desired outcomes was prepared and submitted to consultants. The project team utilized the resultant bids to select consultant services, and these costs were combined with additional financial, logistical, and personnel information to create a pro forma for approval by hospital administration. Conclusions: Pending at the time of submission.

Learning Objectives:

Recall the classifications of compounding risk levels and associated USP <797> requirements.

Describe the key components of a request for proposal.

Self Assessment Questions:

Which of the following statements is accurate?

A Low-risk compounding includes small-volume parenterals and can

B: Medium-risk compounding includes admixtures prepared using on

C: High-risk compounding includes complex manipulations such as T

D: Medium-risk compounding includes batch preparations such as sy

When preparing a request for proposal to elicit initial bids from consultants, the hospital or healthcare system should include which of the following?

A The return on investment tool demonstrating potential cost savings

B Blueprints detailing the new space to be designed.

C A detailed explanation of desired services and expected outcomes

D Pricing information for drugs currently being outsourced.

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-650 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIPSYCHOTIC PRESCRIBING PRACTICES: AN EVALUATION OF CURRENT PRESCRIBING PRACTICES OF ANTIPSYCHOTICS FOR INPATIENT DELIRIUM

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Purpose: Delirium is estimated to complicate 10-25% of acute hospital admissions, affecting up to 50% of elderly patients and 60-85% of intensive care unit patients. The development of delirium leads to increased morbidity and mortality, increased cost of care, poor functiona and cognitive recovery, limited rehabilitation, and increased hospital acquired complications. The objective of this study was to describe current prescribing practices of antipsychotics for the treatment of delirium in hospitalized patients. Comparative efficacy was assessed using differences in length of stay and as needed benzodiazepine use. Comparative safety was assessed by evaluating frequency of restraint use, number of inpatient falls, and location to which the patient was discharged. Methods: A retrospective chart review was conducted evaluating the medical records of inpatients at St. Vincent Hospital greater than 18 years of age with an ICD-9 diagnosis of delirium from March 1, 2012 - August 31, 2012. Patients from both the general medicine and intensive care units were included. Excluded patients were those admitted with a history of alcohol or illicit drug abuse, admission due to drug overdose, history of active cancer, and admission with pre-existing cognitive impairment including dementia, anoxic brain injury, history of Parkinsons, history of a stroke, and admission to the neuro/trauma intensive care unit. Patients with a contraindication to an antipsychotic were also excluded. Results: Our patient population (n=40) had a mean age of 69 years (SD +18.68) and a median length of stay of 6 days. Nine (23%) patients received an antipsychotic for delirium. Patients who received an antipsychotic had a statistically significant longer duration of stay and more as-needed benzodiazepine use than patients who did not receive an antipsychotic ($p<0.001$).

Conclusion: Patients receiving antipsychotics had significantly longer lengths of stay and required more supplemental benzodiazepine use than patients not receiving antipsychotics

Learning Objectives:

List the adverse consequences associated with the development of delirium

Identify risk factors that may contribute to a patient developing delirium

Self Assessment Questions:

Which of the following is a potential consequence of a patient developing delirium?

A Poor functional and cognitive recovery

B: Decreased hospital acquired complications

C: Decreased cost of care

D: Decreased morbidity and mortality

Which of the following is not considered a risk factor in the development of delirium?

A Medications

B Increasing age

C Female gender

D Sleep deprivation

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-312 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF MIGRAINE PHARMACOTHERAPY ON PATIENT STAY IN THE EMERGENCY DEPARTMENT

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Purpose: Migraine is a chronic neurovascular disorder characterized by dysfunction of the central and peripheral nervous systems and intracranial vasculature. Acute exacerbations of episodic and chronic migraine cause severe and disabling pain that often results in visits to a emergency department (ED), as well as decreased productivity and missed time from work, school, and other activities. In the United States headaches accounted for 2.1 million ED visits annually, 2.2 percent of a ED visits are secondary to migraine. To our knowledge, no clinical trial has studied the effect migraine pharmacotherapy has on length of stay in the ED. In addition, drug shortages have limited the availability of migraine treatment modalities in the emergency department. This has moved prescribing patterns away from common practice. The aims of this study are to (1) determine if the selection of migraine pharmacotherapy affects length of stay in the emergency department (2 and to ascertain whether the climate of drug shortages has had an effec on migraine treatment. Methods: Patients will be identified for inclusion in this study, using the health systems electronic medical record, by having received a diagnosis for migraine in the emergency department. Patients younger than 18 years of age, patients with multiple diagnoses, and those who received initial treatment with an agent other than prochlorperazine, metoclopramide, or haloperidol will be excluded from the study. The primary outcome measure is time spent in the ED, defined as time of migraine treatment administration to the time of discharge recorded in the electronic medical record. Secondary outcomes include migraine pharmacotherapy adverse event, repeat visit to the ED within 48 hours of initial presentation, and patient admission to the hospital. Results/Conclusions: Research is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Indicate which treatment options are appropriate first-line abortive migraine therapies.

State the risks associated with the utilization of various migraine treatment options.

Self Assessment Questions:

Which of the following is an appropriate first-line option for treatment of migraine?

A Chlorpromazine IV

B: Ketorolac IM

C: Mepiridine IV

D: Dihydroergotamine SC

Which of the following migraine treatment options does not carry the risk of extrapyramidal adverse effects?

A Chlorpromazine

B Metoclopramid

C Haloperidol

D Butorphanol

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-313 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING INCREASES IN INR AND BLEEDING RATES IN CHRONIC WARFARIN PATIENTS RECEIVING ANTIBIOTICS FOR THE TREATMENT OF URINARY TRACT INFECTIONS

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Purpose: Warfarin sodium is the most commonly used oral anticoagulant. Among the elderly, who are the largest demographic of warfarin users, urinary tract infections are one of the most common infections observed in admitted patients. Studies of antibiotic use in chronic warfarin patients have reported an increased risk of bleeding among these patients. For many antibiotics, particularly those used in the treatment of urinary tract infections, data is either lacking or controversial with regards to interactions with warfarin. The primary objectives of this study are to determine the percent increase of INR values and assess bleeding rates associated with individual antibiotics commonly used to treat urinary tract infections.□□Methods: A retrospective chart review of St. Vincent Hospitals inpatients from June 1st 2011 through September 30th 2012 was conducted. Patients included in the study were adult inpatients who had been taking warfarin prior to hospitalization and had a diagnosis of urinary tract infection that was treated with any of the following antibiotics: ceftriaxone, cephalexin, cefazolin, ampicillin/sulbactam, amoxicillin/clavulanate, piperacillin/tazobactam, or ciprofloxacin. Patients less than 18 years of age, patients who are admitted with subtherapeutic or supratherapeutic INR levels at admission, and patients who have a diagnosis of a bleeding event before antibiotic use will be excluded from this study. INR values were collected on the date of admission or earliest recorded, date of antibiotic start, and date of peak INR value during the length of hospital stay. Based on the data collected, the percent of change of INR value from day one of antibiotic use to the peak INR value was compared for each antibiotic group. Bleeding rates were also assessed among each antibiotic group.□□Results/Conclusions: Final results and conclusions will be presented at the Great Lakes Residency Showcase.

Learning Objectives:

Discuss the interaction of warfarin and commonly used antibiotics for the treatment of urinary tract infections.

Identify antibiotics for the treatment of urinary tract infections that have the most potential to increase the INR value of a chronic warfarin patient

Self Assessment Questions:

What is the increase in risk of bleeding among chronic warfarin users started on any antibiotic?

A 2 times

B: 3 times

C: Greater than 3 times

D: No difference

What are potential mechanisms of interaction between antibiotics and warfarin?

A Altered metabolism

B Increased metabolism of clotting factors

C Vitamin K interference

D A and C are correct

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-314 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF CURRENT HOSPITAL ANTIMICROBIAL STEWARDSHIP PRACTICES IN THE COMMONWEALTH OF KENTUCKY AND WILLINGNESS TO PARTICIPATE IN A STATEWIDE STEWARDSHIP PROGRAM

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Purpose: □Currently, disparities exist between new antimicrobial development and increasing resistance to existing agents. In order to maintain the integrity of current therapies, pharmacists can aid in the conservation of current antimicrobials via antimicrobial stewardship programs. The Infectious Disease Society of America and Society for Healthcare Epidemiology of America published guidelines for Developing Institutional Programs to Enhance Antimicrobial Stewardship in 2007, which were designed to promote and guide development of antimicrobia stewardship practices. □In order to understand how to improve antimicrobial stewardship, we must be able to characterize the current state of these practices. Given that patients are not limited to a single prescriber, hospital, or city, antimicrobial stewardship is better characterized by the prescribing practices of regions. This survey will characterize antimicrobial stewardship practices across the Commonwealth of Kentucky which has not been previously done. The survey is designed to identify barriers or limitations of maintenance and implementation of practices, identify perceived needs, and assess willingness of individual hospitals to collaborate in a statewide program where antibiogram data and antimicrobial use were shared.□□Methods: □

The Commonwealth of Kentucky has approximately 100 hospitals. The survey will be administered via email using REDCap and will be sent to Directors of Pharmacy at each hospital. One survey will be administered per hospital by the person designated by the institutions Director of Pharmacy. All hospitals in Kentucky will be included as long as answers are provided to key questions identified in the survey. The survey will be open for a total of 6 weeks. Emails will be sent to non-responders one month, two weeks, two days and 24 hours before survey closure. Statistical analysis will be descriptive in nature with some analysis of relationships and associations using appropriate techniques.□□Results/Conclusions: □Results and conclusions to be presented at Great Lakes Residency Conference.

Learning Objectives:

Review the IDSA and SHEA guidelines for Developing Institutional Programs to Enhance Antimicrobial Stewardship in 2007.

Recognize barriers and limitations to implementation of antimicrobial stewardship practices at differing hospital sites.

Self Assessment Questions:

Which of the following is a goal of antimicrobial stewardship as listed in the 2007 IDSA guidelines?

A Maximize unintended consequences of antimicrobials

B: Optimize clinical outcomes

C: Promote the development of new antimicrobials

D: Reduce health care costs without regard to impact on quality of ca

Unintended consequences of antimicrobial therapy include:

A Decreases in resistance

B Increase drug costs

C Selection of non-pathogenic organisms

D Toxicity

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-651 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL CURE RATES AS AFFECTED BY MIC AND ANTIMICROBIAL SELECTION OF VANCOMYCIN OR LINEZOLID IN MRSA PNEUMONIA

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Clinical cure rates as affected by MIC and antimicrobial selection of vancomycin or linezolid in MRSA pneumonia□□Purpose: □As several studies have consistently reported clinical failure rates of 40% or greater for vancomycin in patients with MRSA pneumonia, examination of the relationship between vancomycin MICs and clinical outcomes is particularly important in the treatment of MRSA pneumonia. Linezolid has become another treatment option as it has been shown to achieve high concentrations in epithelial lining fluid of the lung. The objective of this study is to assess the impact of MIC and antimicrobial selection of vancomycin or linezolid on clinical outcomes of patients with MRSA pneumonia. □□Methods: □This is a retrospective, single center, observational study has been accepted as exempt from review by the Western Institutional Review Board for research involving the collection of existing data and records. Data will be collected without patient identifiers and maintained confidentially. Patients treated for documented MRSA pneumonia with vancomycin or linezolid between July 1st, 2011 and June 1st, 2012 will be identified using the hospitals electronic medical database and chart review. Patients will be excluded if they are less than 18 years of age, have a hypersensitivity to vancomycin or linezolid, are infected with gram positive organisms known to be resistant to vancomycin or linezolid, have received treatment for less than 48 hours, are pregnant, have meningitis, endocarditis, or osteomyelitis, have a CD4 cell count less than 200 per mm3 secondary to human immunodeficiency virus infection, or have severe neutropenia (less than 500 per mm3). The following data will be collected: age, sex, creatinine clearance, antibiotic dose and duration, vancomycin levels, sputum cultures, MIC, and bronchoalveolar lavage. □□

Results and Conclusions:□Data collection is currently in progress. Preliminary results and conclusions will be presented.

Learning Objectives:

Recognize current treatment options for MRSA pneumonia.

Discuss the strengths and weaknesses of current treatments.

Self Assessment Questions:

Which of the following is not a treatment option for MRSA pneumonia?

A Vancomycin
B: Daptomycin
C: Linezolid
D: All of the above options are possible.

What makes linezolid an attractive treatment option for pneumonia specifically?

A Favorable side effect profile
B Low cost
C High concentrations achieved in epithelial lining fluid of the lung
D Linezolid should not be used in pneumonia

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-315 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADVERSE EFFECTS AND MANAGEMENT OF ELECTROLYTES AND SERUM CREATININE DURING THERAPEUTIC HYPOTHERMIA

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Purpose: Therapeutic hypothermia is a technique used to decrease damage to the cells after a significant event such as cardiac arrest. Complications during the various phases of hypothermia exist, including metabolic disturbances; however, data on electrolyte disturbances is minimal. Electrolyte abnormalities can be detrimental to patients and currently no protocol exists for electrolyte management during therapeutic hypothermia at Bronson Methodist Hospital (BMH). The purpose of this study is to evaluate if therapeutic hypothermia had any effect on electrolyte changes, whether physicians ordered supplementary doses of the electrolyte, and if clinically relevant results applied, such as an arrhythmia associated with the shifted electrolyte. □□

Methods: A retrospective study evaluating adults receiving therapeutic hypothermia at BMH from January 2007 to June 2012. The primary outcome was to evaluate changes in serum electrolytes (sodium, potassium, magnesium, calcium, and phosphate) and serum creatinine during the various phases (pre-cooling, cooling, maintenance, rewarming, and 24 hours post rewarming) of hypothermia. Secondary outcomes included supplementation requirements of serum electrolytes, incidence of arrhythmia, prolonged QT interval, mean temperature, the use of vasopressor therapy, mortality and ICU and hospital length of stay.□□Results/Conclusions: Will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss potential changes in serum electrolytes for patients receiving therapeutic hypothermia.

Recognize potential complications that could arise from supplementatior of electrolytes during therapeutic hypothermia.

Self Assessment Questions:

Therapeutic hypothermia is a treatment modality for which of the following?

A Cardiac arrest patients
B: Traumatic brain injury patients
C: Subjective to physician preferences, some forms of brain injury
D: All of the above

What would be expected to occur to serum potassium during the cooling phase of hypothermia?

A Potassium will remain the same
B Potassium will shift out of the cells potentially causing hyperkalem
C Potassium will shift in the cells potentially causing hypokalemia
D Potassium will shift in or out of the cells; It's unpredictable

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-316 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREVENTING INAPPROPRIATE PNEUMOCOCCAL VACCINATION IN THE INPATIENT SETTING: EFFECTIVENESS OF A PROCESS IMPROVEMENT INITIATIVE

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PURPOSE: The incidence of disease and death associated with pneumococcal infections has led many institutions to initiate blanket orders to ensure that vaccination rates are as high as possible. However, this has inadvertently led to an increase in the number of patients who are being inappropriately vaccinated. This represents a waste of resources for the hospital and patient, as they are paying for a vaccination thats not indicated and provides no additional immunologic benefit against pneumococcal disease. Moreover, such vaccinations expose patients to additional risks. The Michigan Care Improvement Registry (MCIR) collects immunization information and makes it accessible to users online. This study aims to identify whether looking for documentation in MCIR prior to administration of a vaccination, as well as documentation into MCIR after administration will allow for the prevention of duplicated vaccinations.□□METHODS: This study uses a before/after design and focuses on two process changes. First, when a new order for the pneumococcal vaccine is generated, a pharmacist will be tasked with going into PowerChart to ensure the patient is eligible, and then accessing MCIR to verify they have not received the vaccination elsewhere. If the patient is not eligible the order will be voided. Second, there will be an implementation of a system for documentation of pneumococcal vaccination given at SMHC into MCIR done by the primary investigator. The number of duplications after initiation of these process changes will then be compared to a sample of patients who visited SMHC prior to implementation. Data will be collected using electronic medical records. The primary outcome of percentage of patients receiving unnecessary pneumococcal vaccine during each of the time periods will be assessed using a Chi-square test □□

RESULTS: Data collection and analysis is currently in progress. □□

CONCLUSIONS: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify which patients are eligible for pneumococcal vaccination.

Discuss why duplicate vaccination should be prevented.

Self Assessment Questions:

Which of the following patients should be vaccinated with the pneumococcal vaccine?

A Patients 55 years or greater who have not previously been vaccina

B: Residents of nursing homes.

C: Adults on chemotherapy.

D: Revaccination of a patient who received the vaccine last year, but

Patients who have been previously vaccinated with the pneumococcal vaccine and are given a duplicate vaccine have a higher risk of:

A Fainting

B Developing Guillain-Barre syndrome.

C Getting an upper respiratory infection.

D Having pain and swelling at the injection site.

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-317 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND EXPANSION OF THE PHARMACIST ROLE IN PREVENTING HOSPITAL-ACQUIRED CLOSTRIDIUM DIFFICILE INFECTION

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Purpose:□To decrease the incidence of hospital-acquired Clostridium difficile infection (CDI) at University of Wisconsin Hospital and Clinics (UWHC) by: achieving 90% compliance with hand hygiene and enhanced contact precautions (ECP) for patients in CDI isolation; developing pharmacist competence in CDI prevention strategies; reducing use of medications associated with CDI by 10%.□□Methods:□Compliance of hospital personnel with hand hygiene and ECP, based on the World Health Organizations five moments of hand hygiene, will be measured by undercover observers in patients residing in CDI isolation. A minimum of 100 observations will be completed pre and post hand hygiene/ECP education and door signage improvements.□□Pharmacist competence with CDI prevention strategies will be measured using a case-based computer based learning module which is supplemented by UWHC CDI prevention and treatment guidelines. Creation of the learning module will be guided by an electronic survey of pharmacist self-rated awareness, familiarity, and confidence with the UWHC CDI guidelines.□□Reductions in use of medications associated with CDI will be assessed by comparing defined daily dose and days of therapy per 1000 patient days of fluoroquinolones, clindamycin, and proton pump inhibitors pre and post pharmacist competency completion.□□Results/Conclusions:□Hand hygiene compliance among pre-intervention observations (N=101) upon entering and exiting rooms was 63.4% and 69.3% respectively. ECP compliance with gloves and gowns upon entering rooms was 85.1% and 88.1% respectively. Among responses to baseline pharmacist survey (N=64), 57.9% and 55.5% feel confident identifying an alternative therapeutic agent to reduce risk of CDI and formulating an evidence-based recommendation for this agent to the primary team respectively.□□Further results/conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe pharmacist participation in antimicrobial stewardship initiatives for the prevention of Clostridium difficile infection

Discuss barriers to compliance with Clostridium difficile infection control best practices related to hand hygiene and enhanced contact precaution

Self Assessment Questions:

Which of the following statements regarding prevention strategies for Clostridium difficile infection is correct?

A Clostridium difficile infection does not contribute to increased mort

B: Increased exposure to medications such as fluoroquinolones, clinc

C: Compliance with infection control best practices is not necessary f

D: Pharmacists should participate in infection control and antimicrobi

Which of the following is a barrier to compliance with Clostridium difficile infection control best practices related to hand hygiene and enhanced contact precautions?

A Lack of knowledge of infection control best practices

B Hand washing stations located inside each room

C Alcohol gel dispensers located inside and outside each room

D Clear and visible enhanced contact precautions instructions

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-318 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE ANALYSIS OF TREATMENT OUTCOMES IN VETERAN PATIENTS RECEIVING MEDICATION THERAPY MANAGEMENT BY CLINICAL PHARMACISTS WITH OR WITHOUT TELEHEALTH MONITORING

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Purpose: Since the implementation of the Patient Centered Medical Home model of care, the Veterans Health Administration has made efforts to improve patient access to the multidisciplinary team. One way in which this endeavor has been made possible is through the Care Coordination Home Telehealth program, a system through which healthcare providers can increase monitoring of chronic disease states by supplying home telemonitoring devices for their patients. Although the ability to monitor more frequently and make interventions more frequently may suggest an improvement in patient outcomes, few studies have evaluated this hypothesis. Furthermore, studies examining the outcomes of telehealth in chronic disease state management have shown varied results.□□Methods: A retrospective chart review will be performed on all patients being followed by Clinical Pharmacy between the dates of January 1, 2011 and June 30, 2012 who have a diagnosis o diabetes and/or hypertension and who are not being followed by endocrinology. Using a multivariate regression model for analysis, patient medical records of those being aggressively monitored through Care Coordination Home Telehealth will be compared to those who are not to determine what percentage of each group reached target A1C and/or blood pressure goals, and if there is a difference in how much time elapsed before the achievement of those goals. On further analysis percent change from baseline in A1C and/or blood pressure, number of medication interventions completed, number of medications prescribed, number of emergency department visits that occurred, and number of contacts with patient made will also be compared. Confounders which will be mathematically controlled for include A1C at initial clinical pharmacy appointment, age at initial diagnosis, time since diagnosis, body mass index, and serum creatinine > 1.5mg/dL.□□Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the benefits of telehealth monitoring.

Identify barriers to the initiation of a care coordination home telehealth program.

Self Assessment Questions:

In the recent Veterans Affairs Tennessee Valley Healthcare System study, which outcome was statistically significant?

A Change in A1C from baseline to 6 months.

B: Percent of patients reaching A1C goal.

C: Number of emergency department visits pertaining to diabetes.

D: Number of medication interventions made.

Which of the following are barriers to the initiation of a care coordination home telehealth program at your institution?

A Increased adverse drug events

B Improved patient outcomes

C Cost, staffing, and technology

D Low incidence of diabetes

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-319 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROCALCITONIN AND THE EFFECT ON DURATION AND QUANTITY OF ANTIBIOTIC USE IN PNEUMONIA AND SEPSIS PATIENTS AT A COMMUNITY TEACHING HOSPITAL

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Purpose: □The inappropriate use of antibiotics has led to a variety of consequences including increased resistance and serious side effects such as secondary clostridium difficile infections. Procalcitonin is a biological marker that is thought to be more specific for bacterial infections and has been studied in a variety of settings. The primary objective of this study is to determine if there is a difference in either the duration or quantity of antibiotics used for the treatment of pneumonia o sepsis in patients who have a procalcitonin level drawn compared to those who have not.□Methods:□This is a retrospective, single-center, observational, historical control study that has been approved by the Sparrow Health System Institutional Review Board. A retrospective char review of all patients with a procalcitonin level drawn between August 13 2012 and October 22, 2012 will be completed. Patients that meet the inclusion criteria will be matched (1:1 ratio) to a historical control. The inclusion criteria consist of age greater than 18 years and suspected pneumonia or sepsis diagnosis. Patients will be matched to a historical control based on probable diagnosis, date of admission, unit, age, height, weight, and creatinine clearance. The duration and quantity of antibiotics used will be determined using antibiotic start and stop dates as well as the total number of defined daily doses as described by the World Health Organization Collaborating Centre for Drug Statistics Methodology. □Results and Conclusions:□A total of 25 patients were identified and underwent a comprehensive chart review. Four patients did not meet the inclusion criteria and were excluded. All patients have been matched to a historical control and all data collection is complete. Data analysis is ongoing with final results and conclusions to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the strengths and weaknesses of using procalcitonin as a biological marker to aid in the diagnosis of bacterial pneumonia or sepsi

Review the current literature pertaining to procalcitonin use in pneumonia and sepsis

Self Assessment Questions:

Which of the following is a weakness of procalcitonin?

A It is elevated in liver dysfunction

B: It is more specific for viral infections

C: It is elevated in trauma

D: Its half-life is around 24 hours

Which of the following procalcitonin values would be most indicative of severe sepsis or septic shock?

A 0.01 ng/mL

B 0.10 ng/mL

C 1.00 ng/mL

D 10.0 ng/mL

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-320 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF INTEGRATED PHARMACY SERVICES IN PEOPLE LIVING WITH HUMAN IMMUNODEFICIENCY VIRUS (HIV)

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Background□The Center for Disease Control s (CDC) Division of HIV and AIDS Prevention (DHAP) and other studies have identified linkage to care and continuum of care as two main strategies for successful treatment outcomes in People Living with HIV (PLWH).□□At Froedtert Health (FH), an Integrated Pharmacy Service (IPS) in the Infectious Diseases (ID) Clinic was started in May 2012. This service integrates key players in the health care system that includes ID physician or nurse practitioner, Clinical pharmacist specialized in ID therapy management, Outpatient medication management pharmacy and Social services. The aim of the IPS is to provide customized patient centric care which can enhance medication adherence, and more efficiently monitor comorbid conditions associated with HIV. □ □Purpose □The primary objective of the study is to evaluate the impact of IPS on medication adherence in PLWH. The secondary objective is to evaluate current comorbid condition surveillance practice and identify a uniform comorbid condition surveillance tool at FH.□□Methods□This is a single center, retrospective, observational study. Patients enrolled with FH ID clinic from May 1, 2012 to October 1, 2012 will be included. Patients enrolled in FH ID clinic but not with outpatient medication management pharmacy will serve as the control group. Patients enrolled with IPS will serve as the intervention group. The primary outcome measures include medication adherence, viral load, and CD4 count. Fasting lipid, blood glucose, serum creatinine, influenza and pneumococcal vaccine data wi be collected for comorbid condition surveillance. The study is under review for approval by the Institutional Review Board at the Medical College of Wisconsin.□□Results/Conclusion□Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the importance of IPS in medication adherence and overall health care outcomes in PLWH

Review current comorbid condition surveillance practice in PLWH and identify a uniform surveillance tool for healthcare providers at Froedtert Health

Self Assessment Questions:

What two factors are key for successful treatment outcomes in PLWH, as stated by the DHAP?

A Linkage to care and adherence to treatment

B: Insurance and transportation issues

C: Age of patient and geographical location

D: Education level and other health condition

Which of the following is not a part of Integrated Pharmacy Service (IPS)?

A ID pharmacist

B ID physician and nurse practitioner

C Medication management pharmacy

D Physical therapy

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-652 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

RELATIONSHIP BETWEEN DAPTOMYCIN MINIMUM INHIBITORY CONCENTRATION (MIC) AND TREATMENT FAILURE AMONG PATIENTS WITH VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE) BACTEREMIA TREATED WITH DAPTOMYCIN

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Purpose: The Clinical and Laboratory Standards Institute (CLSI) defines Enterococcus spp. susceptibility as daptomycin MIC ≤ 4. Daptomycin bactericidality is concentration-dependent. Increasing MICs may limit its effectiveness, requiring higher dosages or an alternative agent for treatment. Although daptomycin is not currently FDA-approved for the treatment of Enterococcal bacteremia, the increasing rates of vancomycin-resistant Enterococcus (VRE), and extensive literature supporting its use for this indication, have led many clinicians to conside daptomycin among first-line treatment options for these infections. Both in vitro pharmacodynamic modeling and in vivo murine models have demonstrated doses of >6 mg/kg may be required to achieve AUC:MIC ratios for optimal bactericidal effect with daptomycin MICs >2, which are higher than the current FDA-approved dosing recommendations. As a result, there is a need to evaluate the effectiveness of daptomycin for treatment of Enterococcal bloodstream infections in relation to daptomycin MIC values, even within the MIC range deemed susceptible by the CLSI.□□Methods: This retrospective cohort analysis included adult patients admitted to an Indiana University Health Hospital with a positive blood cultures for VRE from 2010 to 2012 and who received a dose of daptomycin within 72 hours of the index blood culture. The primary outcome will be treatment failure, defined as a switch to or addition of another antimicrobial with activity against VRE or a blood culture positive for VRE after 72 hours of daptomycin therapy. The secondary outcome will be 30-day all-cause mortality from the index blood culture. Patients will be stratified according to Enterococcal daptomycin MIC of their index blood culture and treatment failure rate will be compared between the strata. Treatment failure rate will also be compared between groups based on daptomycin dose. □□Results and Conclusions: To be presented at the Great Lakes Residency Conference.

Learning Objectives:

Classify an Enterococcus spp. as susceptible or resistant to daptomycin based on the minimum inhibitory concentration.

Identify the pharmacodynamic parameters shown to correlate with the efficacy of daptomycin

Self Assessment Questions:

At which MIC does the Clinical and Laboratory Standards Institute deem an Enterococcus spp. to be susceptible to daptomycin?

A ≤ 1

B: ≤ 2

C: ≤ 4

D: ≤ 8

Which pharmacodynamic/pharmacokinetic parameter has been shown to best correlate with the in vivo efficacy of daptomycin?

A Peak:MIC ratio

B Trough above the MIC for at least 50% of the dosing interval

C AUC:MIC ratio

D A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-321 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREDICTORS OF ANTIPSYCHOTIC POLYPHARMACY IN AN ACUTE CARE TEACHING HOSPITAL

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Purpose: The Joint Commissions Hospital Based Inpatient Psychiatric Services (HBIPS) recently established a set of quality measures evaluating inpatient psychiatric care. HBIPS-4 and HBIPS-5 address the use of antipsychotic polypharmacy. Antipsychotic polypharmacy increases the chance of adverse reactions and drug interactions while minimally improving psychiatric treatment. The objective of the study is to determine whether an association exists between patient-specific factors and the presence of antipsychotic polypharmacy at hospital discharge.□□Methods: This retrospective review was approved by the Institutional Review Board. Admission records were used to identify patients 18 years or older on at least one antipsychotic that were discharged from an inpatient psychiatric unit from January 1, 2012 to June 30, 2012. Patients with a confirmed pregnancy, length of stay less than 3 days, discharge due to elopement or failure to return from leave, or patients who expired were excluded. Data collection included antipsychotics upon admission and discharge, age, gender, race, third party insurance, number of psychiatric admissions, diagnoses, and discharge location. Patients were divided into two groups: those discharged on one antipsychotic medication and those discharged on two or more antipsychotic medications. The primary outcome was the association between each identified patient-specific factor and the odds of antipsychotic polypharmacy at discharge. Secondary outcomes included descriptive characteristics of patients discharged on antipsychotic polypharmacy with documented appropriate justification as defined by HBIPS-5. This information will be used to identify factors that place patients at greater risk for antipsychotic polypharmacy which may affect the quality of care provided.□□Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define antipsychotic polypharmacy.

Explain what constitutes appropriate justification of antipsychotic polypharmacy as determined by HBIPS-5.

Self Assessment Questions:

Which of the following describes antipsychotic polypharmacy?

A One scheduled antipsychotic medication

B: One scheduled and one as needed antipsychotic medication

C: Two different as needed antipsychotic medications

D: Two different scheduled antipsychotic medications

According to HBIPS-5, which of the following is considered appropriate justification for antipsychotic polypharmacy?

A Patients prescribed two atypical antipsychotics

B Patients who have failed one trial of antipsychotic monotherapy

C Patients with augmentation of clozapine with a second antipsychot

D Patients who are diagnosed with multiple psychiatric disorders

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-322 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST INITIATIVE TO OPTIMIZE MEDICATION THERAPY AT TRANSITIONS OF CARE: A FOCUS ON HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENTS IN AN UNDERSERVEI POPULATION

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PURPOSE: Human immunodeficiency virus (HIV) requires comprehensive management by patients, providers and health systems. Antiretroviral therapy (ART) regimens are essential to prevent disease progression and development of opportunistic infections (OI). As demonstrated in several studies, pharmacists have the knowledge and skill set to evaluate ART for appropriateness and counsel HIV patients on their medications. The purpose of this evaluation is to define the current state of medication management of HIV patients, identify areas for improvement and optimize HIV therapy at transitions of care.
□□
METHODS: In the retrospective review, medical records of patients prescribed ART were evaluated at this safety-net hospital. The categories evaluated include completion of medication history and appropriateness of ART regimens and OI prophylaxis. Inpatient medications were evaluated for dosing, adverse events and drug-drug interactions. Errors were analyzed and process improvements to reduce medication errors were discussed and implemented. A follow-up review will be done and a pharmacist will conduct medication reconciliation of inpatients on ART and contact them via phone after discharge. The phone discussion will include the patients home dose and regimen and determine the adequacy of medication supply and compliance. The Institutional Review Board has approved this study. □□PRELIMINARY RESULTS: The preliminary review identified 58 patients admitted with antiretroviral treatment and a diagnosis of HIV, from April 1, 2012 to September 30, 2012. A total of 78 visits were evaluated with 76 errors identified. The most common errors found were incorrect dose and inappropriate regimen. This review demonstrates the need for proactive pharmacist involvement in HIV patient management. Education measures focused on errors identified and several modifications were applied to the hospital information system. The follow-up review, will determine whether improvement in management of HIV patients resulted. Further, patient contact will be summarized, identifying potential benefits of this role during transitions of care.

Learning Objectives:

Identify common medication-related errors affecting HIV patients at transitions of care

Describe pharmacist driven initiatives to optimize the medication management of HIV patients

Self Assessment Questions:

Which of the following may contribute to a high rate of medication errors among HIV patients?

A The patient's lack of knowledge of their ART regimen

B: Frequent changes in guideline recommendations for the treatment

C: Unfamiliarity of HIV medications by health care providers

D: The proactive involvement of a pharmacist in the care of HIV patie

Which of the following is the most common error found in HIV patients during their inpatient stay?

A New drug-drug interaction

B Wrong dose of HIV medication

C Wrong administration time of HIV medication

D Inappropriate monitoring related to HIV medication

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-323 - L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF CLINICAL OUTCOMES OF CEFTRIAXONE 1 GRAM DAILY VERSUS 2 GRAM DAILY DOSING: A RETROSPECTIVE, NON-INFERIORITY TRIAL

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Purpose□Ceftriaxone is a third-generation cephalosporin antibiotic whicl is FDA approved at a dose of 1 to 2 grams daily to treat a variety of bacterial infections. The Infectious Diseases Society of America recommends ceftriaxone as treatment for a number of common bacteria infections. Currently there is limited evidence to suggest an optimal dose of ceftriaxone. This study will examine clinical outcomes in patients receiving ceftriaxone 1 gram daily compared to 2 grams daily fo appropriate indications in order to clarify dosing recommendations. Available evidence supports the hypothesis that clinical outcomes should not significantly differ between the two groups.□□Methods□Prior to data collection, approval was obtained from the institutional review board (IRB) at Gundersen Lutheran Medical Center for this retrospective review. Eligible patients include those 18 years and older treated with ceftriaxone while hospitalized between November, 2008 and August, 2012. Patients treated for meningitis and those ruled out for infection after the initiation of antibiotic therapy were excluded from statistical analysis. Data collected for each patient included: age, sex, height, weight, hospital diagnoses, relevant comorbidities, ceftriaxone dose and duration, length of hospitalization, and length of intensive care unit stay. These data will be used to determine the achievement of clinical cure and to assess secondary outcomes. Clinical cure is defined as resolutio of signs and symptoms relative to the site of infection and completion of a course of ceftriaxone therapy of appropriate duration for the indication or a transition to an oral antibiotic with similar spectrum. Clinical failure is defined as a change of therapy to an antibiotic with a different spectrum for the remainder of the course, death from any cause, or readmission for the same indication within 14 days.□□Results□Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the available literature on comparing ceftriaxone doses for the treatment of susceptible infections.

Describe the clinical and economic implications of standardizing ceftriaxone dosing.

Self Assessment Questions:

Currently, available literature regarding ceftriaxone dosing indicates:

A Ceftriaxone 1 gram daily is statistically superior to 2 grams daily

B: Ceftriaxone 2 grams daily is statistically superior to 1 gram daily

C: Ceftriaxone 1 gram daily is statistically equivalent to 2 grams daily

D: Ceftriaxone should be dosed higher than 2 grams daily

Which of the following is true?

A Time-dependent killing relies on maintaining concentrations above

B Concentration-dependent killing relies on achieving maximum con

C Ceftriaxone is a time-dependent antibiotic

D Both A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-653 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACISTS ROLE IN AN EMPLOYER SPONSORED DIABETES PROGRAM

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Statement of Purpose: □To analyze the effect of a pharmacist on diabetes related goal attainment, medication usage, medication related problems, economic cost associated with medication interventions, and physician acceptance of pharmacist recommendations.□Methods: □A retrospective chart review involving 3 self-insured companies and a total of 69 patient charts met eligibility criteria. Eligibility criteria included age 18 years, diagnosis of diabetes, and at least 1 year enrollment in the employer based diabetes program. Each patient signed a consent form to participate in this research. A pharmacist was sent for on-site patient visits approximately every 3 months or less, depending on patients. Incentives and requirements differed by program but, all enrolled patients received reduced prescription costs. A fee for service reimbursement model was established with each company. Measured outcomes data included clinical parameters of blood pressure, total cholesterol, triglycerides, HDL, LDL, hemoglobin A1C, self-monitored blood glucose, liver function tests, potassium, urine albumin/serum creatinine, and patient weight. Social parameters measured included alcohol use, smoking status, diet, and exercise. Process measures (eye exam, monofilament testing, and vaccinations), and economic measures (direct medical costs, prescription costs, generic utilization) were also identified. During the initial pharmacist intervention, a certified diabetes educated pharmacist worked alone or collectively, with either a wellness coach or nurse. Using ADA recommendations, visits focused on patient centered goals relating to the clinical, social, and process measures mentioned above. Following each visit, a note was faxed to each patients primary care provider or endocrinologist to initiate patient care changes. Information collected was de-identified and entered into an excel spreadsheet for analysis. Data points were then analyzed to determine trends and pharmacist impact.□Preliminary Results: □Data was evaluated to determine a pharmacists impact on clinical, social, process, and economic measures in an employer sponsored diabetes program.

Learning Objectives:

Describe the role a pharmacist plays in an employer sponsored diabetes program

Identify the effect a pharmacist has on an employer sponsored diabetes program

Self Assessment Questions:

Which of the following best describes the role a pharmacist plays in an employer sponsored diabetes program?

A Collaboratively provides medication therapy management services

B: A pharmacist has no role in an employer sponsored diabetes prog

C: Telling patients to change therapeutic regimens without consulting

D: The only role pharmacists have in an employer sponsored diabete

Which of the following best decribe the impact a pharmacist has on an employer sponsored diabetes program?

A A pharmacists has no impact on an empoyer sponsored program

B Clinical, social, and economic parameters can all be impacted by a

C Impact can only be seen on recommendations made to physicians

D The biggest impact can be seen on decreasing the number of mec

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-324 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF SPECIALTY FERTILITY PHARMACY SERVICES IN AN OUTPATIENT PHARMACY WITHIN A SELF-INSURED HOSPITAL SYSTEM

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Purpose: As health care expenses continue to rise, self-insured hospita systems are faced with cost-containment challenges. To offset increased expenses, employers may increase health premiums and/or limit benefits for certain services. The State of Illinois requires employers to cover fertility services for employees, but companies that self-insure employees are exempt from this mandate. Given the expense associated with fertility medications and services, lack of coverage can be a significant obstacle for employees. The purpose of this project is to establish the procedures necessary to develop and implement specialty fertility services for employees as well as to identify obstacles limiting the implementation of these services within a hospital-based outpatient pharmacy. Providing specialty fertility services, such as, competitively-priced medications, free delivery, personalized counseling and education sessions, and adherence follow-up can provide a convenient alternative for employees who no longer have fertility coverage. The objective of this project is to expand the clinical services offered at the hospital-based outpatient pharmacy, thereby increasing prescription volume, revenue, employee satisfaction and loyalty. □□Methods: This project involves the planning and implementation of a pharmacy service and was exempt from Institutiona Review Board review. A task force, including outpatient pharmacy managers, the pharmacy business director, and the pharmacy purchasing coordinator, was consulted to determine the different components that must be completed prior to marketing and implementing these services. Some of the identified components include, but are not limited to; market research, formulary selection, procurement, development of pharmacy-physician relationships, patient recruitment, identification of storage requirements, development of policies and procedures, staff education materials, and pharmacy workflow for these services. As a quality improvement measure, physician and patient satisfaction will also be evaluated.□□Final results/conclusion:□Results and final conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the benefits of implementing specialty fertility pharmacy services within an existing hospital-based outpatient pharmacy.

Describe the steps required to implement a specialty pharmacy service.

Self Assessment Questions:

Which of the following would not be considered a benefit of implementing specialty fertility pharmacy services within an existing, hospital-based outpatient pharmacy?

A Increasing prescription volume and revenue in the outpatient pharı
B: Expanding the clinical services offered in the outpatient pharmacy
C: Providing a competitively-priced service for employees who no lon
D: Increasing employee utilization of competitor pharmacies for fertilit

Which of the following is/are step(s) necessary for successful implementation of specialty pharmacy services?

A Market analysis
B Formulary selection
C Patient recruitment
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-654 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

FINANCIAL ANALYSIS OF A COMPLIANCE PACKAGING SERVICE IN A COMMUNITY PHARMACY

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OBJECTIVE: To assess the financial feasibility of providing a weekly compliance packaging service in a community pharmacy to mental health patients who reside in their homes. METHODS: This will be an observational study in a community pharmacy to determine costs associated with the processes involved in providing compliance packaging for approximately thirty community dwelling patients enrolled in a compliance monitoring program through the local department of health and human services. Data will be collected throughout a four week packaging cycle. Data collection will include the time to complete all tasks associated with the service such as patient encounters, order entry, medication packaging, and delivery. Net financial gains or losses for providing the service will be examined including packaging material, equipment, and labor costs. Total revenue will be calculated from insurance claims per patient. PRELIMINARY RESULTS/ANALYSIS: We anticipate finding that the costs associated with providing the added services will be smaller than the revenue generated. We hope to make this new service sustainable. By analyzing the components of the cost for the service, we also hope to identify areas to improve efficiency and minimize costs.

Learning Objectives:

Recognize the difference between gross profit and net profit.

List three items that contribute to variable operating costs.

Self Assessment Questions:

Which one of the following best defines gross profit?

A The profit made after subtracting the cost of goods sold
B: The profit made after subtracting the cost of goods sold and opera
C: The profit made after subtracting the indirect costs
D: The profit made after subtracting the direct and indirect costs

Which of the following would not be considered a variable operating cost?

A Blister cards
B Packaging machine
C Labels
D Bubble Sheets

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-655 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIBIOTIC PRESCRIBING IN PATIENTS WITH ASYMPTOMATIC BACTERIURIA

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Purpose:□□Antibiotics are commonly prescribed for suspected urinary tract infections (UTI) regardless of proper diagnosis. A widespread practice in hospitalized patients is to treat asymptomatic bacteriuria (ASB). The 2005 Infectious Disease Society of America (IDSA) Guidelines for ASB recommend against the use of antibiotics in these patients. This is due to lack of benefits, increase in adverse events, a rise in bacterial resistance, and superinfections. In addition, treating ASB prolongs hospital length of stay and leads to increased costs. The Purpose of this study is to evaluate the prescribing of antibiotics in patients with ASB at St. Joseph Mercy Oakland Hospital (SJMO).□□Methods:□□This is a retrospective chart review of patients admitted to SJMO between January 2012 and June 2012. Patients were identified using the hospitals electronic medical records system. Patients at least 18 years of age with significant bacteriuria (>105 cfu/ml) and a diagnosis of UTI were included in this study. Patients were excluded if they had documented pregnancy, signs/symptoms of UTI, mental status changes, urinary tract obstruction, kidney transplant, cellulitits near the groin area, pyelonephritis, bacteremia, or presence of fungi in the urine. Patients were also excluded if they were undergoing urosurgery, taking any anti-rejection medications, or on chemotherapy within the past three months. The primary outcome of the study is to determine the percentage of patients who were prescribed antibiotics inappropriately for the treatment of ASB. Additional data collected include: the causative organisms, the number of patients with a positive urine analysis, the presence of other infections, the number of antibiotic days, and the cost of antibiotics. □□□Results: □□Results and conclusions of this study will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the indications for antibiotic treatment in patients with asymptomatic bacteriuria

Describe the symptoms of urinary tract infections in different patient populations

Self Assessment Questions:

Which of the following patients with asymptomatic bacteriuria should be treated with antibiotics?

A 86 year old female with diabetes who lives in a nursing home

B: 27 year old female with a positive urine analysis

C: 31 year old pregnant female

D: 43 year old female with diabetes and hypertension

Which symptom does the elderly population commonly present with that leads to empiric treatment of a UTI?

A Chest pain

B Mental status changes

C Sore throat

D Shortness of breath

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-325 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USING SIMULATION-BASED LEARNING TO ENHANCE MEDICATION SAFETY EDUCATION

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Purpose: Medication errors are preventable adverse events occurring during the medication use process that can cause substantial patient harm, increase healthcare costs, and compromise patients trust in healthcare. The 1999 Institute of Medicine report "To Err is Human" recommended implementing simulation training to increase the visibility of potential errors to healthcare practitioners and thereby reduce errors, build safer health delivery systems, and improve patient care. Simulation training is an interactive, team-based approach to healthcare education where participants learn, practice, and make mistakes in lifelike, yet controlled environments without exposing patients to real harm. Studies have suggested that simulation training can enhance learning, improve retention of knowledge, and even decrease medication administration errors. The objective of this project is to develop and implement effective, reproducible, medication-related simulations to enhance medication safety education and prevent future medication errors.□□Methods: Medication error reports and performance improvement audits at NorthShore University Health System were reviewed to identify common medication-related errors and educational deficits. Heparin drip administration, monitoring, and documentation were found to be areas with opportunity for improving nursing education through simulation. Through interviews with stakeholders from the NorthShore Center for Simulation and Innovation, a need for enhanced emergency medicine education involving tissue plasminogen activator (r tPA) use and administration for thrombolysis was also identified. Upon establishment of these core areas, medication-related scenarios were developed and simulated and supplementary education was provided as needed to reinforce necessary concepts. Pre- and post-assessments wil be used to determine effectiveness of the simulation program on retention of skills and knowledge. For areas with previously identified medication errors, pre- and post-intervention error rates will be assessed to further evaluate the effects of the simulations.□□Results/Conclusions Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe current application of simulation training in the medical field.

Discuss opportunities to incorporate simulation training into medication safety education.

Self Assessment Questions:

What best defines a design for recovery?

A A mechanism for evaluating near-miss medication errors through r

B: A system that makes errors visible to healthcare workers by duplic

C: A systematic approach to evaluating adverse drug reactions and ir

D: A method of problem solving that seeks to identify the root cause

Simulation has been shown to improve which of the following medicatior related activities?

A Sterile product preparation

B Medication administration

C Order verification

D Medication counseling

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-795 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

VALUE OF PHARMACIST-PROVIDED MEDICATION THERAPY MANAGEMENT SERVICES FOR PATIENTS ENROLLED IN A PATIENT-CENTERED MEDICAL HOME PROGRAM

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Purpose: The purpose of this study is to determine the impact of medication therapy management interventions on healthcare quality and cost measures in a population of patients receiving coordinated care within the patient-centered medical home model. Background: The patient-centered medical home (PCMH) model outlines an innovative approach to providing primary care. The model unites a variety of healthcare disciplines to deliver accessible, efficient, coordinated services. Core features of the model as described in the literature include the physician-led multidisciplinary care team, patient engagement, whole-person care, outcome measurement, ongoing quality and safety assessment, non-traditional scheduling arrangements and payment reform with financial incentives for improved continuity of care. Trial data has demonstrated that the model may reduce hospital admissions, emergency department visits, and overall per patient cost.

In 2012, Mayo Clinic Health System in Eau Claire, Wisconsin partnered with a regional insurer to initiate an accountable care pilot program. Through the pilot, participating patients receive care based on the PCMH model. The pilot aspires to lower healthcare costs while providing a higher level of patient care. In order to meet quality measures related to medication use, pharmacists have extended medication therapy management (MTM) services to pilot patients, particularly those at high risk for medication-related complications. Methods: A retrospective review of the electronic medical record (EMR) was performed to assess pharmacist interventions contributing to the quality and/or cost of medication therapy. The following information was collected and analyzed: number and type of drug therapy problems identified by the pharmacist, drug therapy problems resolved through recommendations accepted by the patient and/or prescriber, change in cost of the medication regimen, change in patient-reported motivation and confidence in self-management of medications, and modification of the EMR medication list to accurately reflect the medication regimen. Results: Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the core features that define the patient-centered medical home model.

Identify the potential benefits of providing care in accordance with the patient-centered medical home model.

Self Assessment Questions:

The patient-centered medical home (PCMH) model focuses on:

A Appropriately caring for home-bound patients
B: Transitioning patients from the community to skilled nursing faciliti
C: Providing coordinated, whole-person care with ongoing quality, saf
D: Assigning one primary care provider to manage all of a patient's he

According to data from pilot programs, the patient-centered medical home (PCMH) model may:

A Decrease hospitalizations
B Dramatically increase emergency department visits
C Limit communication between healthcare providers
D Discourage the use of technology to document and monitor patien

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-326 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHYSICIANS PERSPECTIVES AND WILLINGNESS TO ENTER INTO A COLLABORATIVE DRUG THERAPY PROTOCOL WITH PHARMACISTS PURSUANT TO AN ESTABLISHED RELATIONSHIP

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Purpose: Collaborative practice between pharmacists and the physicians improves patient satisfaction and clinical outcomes. In April 2011, Indiana passed a law expanding the settings in which pharmacists are able to adjust drug therapy following the establishment of a collaborative drug therapy management (CDTM) protocol. Few studies exist in the U.S. that explore physician perceptions and motivations for entering into CDTM arrangements with community pharmacists. The objective of this study is to assess the physicians perceptions of the ongoing collaborative relationship and to reveal their perceptions of and willingness towards a future collaborative drug therapy protocol agreement with community pharmacists within an established relationship. Methods: A cross-sectional survey was administered to a sample of 82 physicians with a history of previous patient referral to one independent community pharmacy in Southern Indiana. The written survey was developed to meet the study objectives. The survey contains demographic information and closed-ended questions using a 5-point Likert-type response scale. Using a modified Dillman method, the initial survey is being delivered to the physicians in person; a reminder fax is being sent after two weeks to all non-respondents, and the full survey is being mailed to all non-respondents after 3 weeks. Respondents and non-respondents will be tracked using code number. The physician respondents will be offered a gift card for participation in the survey. Responses and participant demographics will be summarized using descriptive statistics. This study has been approved by the Purdue University Institutional Review Board. Preliminary Results: Survey distribution began in January with 43 surveys having been distributed. Results will be presented at the Great Lakes Pharmacy Resident Conference. Conclusions: This research may be used to encourage and advance the collaborative relationship between community pharmacists and physicians.

Learning Objectives:

Describe the benefits of entering into collaborative practice agreements

List the provisions of the the law that allow pharmacists to engage in collaborative drug therapy protocols with physicians from the community setting.

Self Assessment Questions:

Which of these are valid billing opportunities for the community setting?

A Diabetes self-management education
B: Medication therapy management services
C: Disease-related clinical services
D: A and B only

What does IC 25-26-16 require for a valid collaborative drug therapy protocol?

A Medical records are accessible
B Physician readily available for consult
C Condition/disease for treatment has been diagnosed by a physicia
D A,B, and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-640 -L03-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVING CLINICAL QUALITY MEASURES FOR VENOUS THROMBOEMBOLISM IN A COMMUNITY HOSPITAL

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Purpose: Assess compliance to the venous thromboembolism (VTE) 1 measure in a community hospital pre-and-post-implementation of a pharmacy-run protocol.□□Methods: The pilot study, approved by the Institutional Review Board, involves both retrospective and prospective data collection evaluating compliance to the VTE-1 measure. Retrospective review included patients admitted to the general medical and orthopedic floors of the hospital between June 01, 2012 and August 31, 2012. Prospective analysis included patients admitted to the same floors of the hospital between September 17, 2012 and December 17, 2012. Patients were excluded if they were less than 18 years old, comfort care, or length of hospital stay was less than or equal to two days. Patients not receiving pharmacological VTE prophylaxis in the pilo group were identified through the use of real-time, web-based software. Once identified, patients were assessed by clinical pharmacists. Pharmacists reviewed the VTE risk score as calculated by a risk assessment form completed by a member of the nursing staff. If VTE prophylaxis was indicated then the pharmacist notified a licensed independent practitioner (LIP) with recommendations on pharmacological VTE prophylaxis agent and dose. If there was a contraindication to pharmacological VTE prophylaxis, the pharmacist documented in the patient medical record. Data collection included the following: completion of the VTE risk assessment, VTE risk score, and if prophylaxis was initiated within the allotted time period. The pilot data will be assessed and compared to data collected during retrospective chart review.□ □Results/Conclusions: Retrospective data yielded the following results: 39% of patients did not have the VTE risk assessment filled out and 12.6% of patients were not started on VTE prophylaxis nor was a contraindication listed in the chart. Data collection and analysis is ongoing, and the conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize patients that meet criteria for VTE-1 and select appropriate therapy.

Describe Centers for Medicare and Medicaid Services (CMS) approved reasons for not administering pharmacological or mechanical prophylaxis.

Self Assessment Questions:

When does VTE prophylaxis have to be administered on a non-surgical patient in order to be compliant with VTE-1?

A By the end of hospital day one

B: By the end of hospital day two

C: By the end of hospital day three

D: Anytime prior to hospital discharge

What is a reason for not administering pharmacological prophylaxis according to CMS guidelines?

A Thrombocytopenia

B Patient had surgery one week ago

C Patient is on aspirin

D Patient is ambulatory

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-656 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TWO DIFFERENT DOSING STRATEGIES FOR PHENYTOIN LOADING DOSES GIVEN IN THE EMERGENCY DEPARTMENT

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Background: Phenytoin can pose a significant challenge to clinicians because of its narrow therapeutic window and complex Michaelis-Menten, non-linear pharmacokinetic profile. The unpredictable relationship between dose and serum phenytoin concentration supports the need to individualize therapy using therapeutic drug monitoring. A clinical pharmacokinetic service for phenytoin dosing can benefit patient care in terms of maximizing both efficacy and safety, while also producing a potential economic benefit for the health system by reducing the number of inappropriate lab draws, optimizing the use of phenytoin and reducing adverse drug reactions. □□Purpose: The purpose of our study is to evaluate the use of a combined physcian and pharmacist directed phenytoin loading dose strategy when compared to pre-intervention retrospective data.□□Methods: This single-center, non-randomized, quasi experimental study is being conducted at St. John Hospital and Medical Center and has been approved by the institutional review board prior to commencement. Patients meeting the following criteria are included; age ≥18, administration of phenytoin in the ED for loading dose purposes from January 2010 to March 2013. The following patients are excluded: patients presenting with traumatic brain injury, pregnant patients, and patients given fosphenytoin. The primary outcome will be the proportion of inappropriate doses compared to appropriate doses in the pre-intervention and post-intervention study groups. Secondary outcomes will include: a comparison of post-intervention pharmacist dosing vs. retrospective data and post-intervention physician dosing vs. retrospective data, number of inappropriate phenytoin lab draws 48-hours post loading dose, number of reported adverse drug reactions related to the phenytoin loading dose within 24-hours, reoccurrence of seizures during 24-hours post loading dose and addition of a anti-epileptic drug therapy 24-hours post loading dose. □□Results: Data collection, analysis, final results, and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Recall the dosing challenges associated with phenytoin and understand the significance this may have on patient-to-patient basis.

Discuss the rationale and benefit of developing a phenytoin dosing service.

Self Assessment Questions:

Which of the following patient factors is most likely to cause an increase in the free fraction of phenytoin serum levels?

A Concomitant use of a levetiracetam

B: Congestive heart failure

C: Acute kidney injury

D: Concomitant use of valproic acid

What are potential advantages of having a pharmacist-managed phenytoin dosing service?

A Higher seizure recurrence rates

B Reduced use of inappropriate serum drug levels

C Increased drug costs

D Greater pharmacist workload

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-327 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CREATING AND IMPLEMENTING A DOSING PROTOCOL FOR INTRAVENOUS IMMUNE GLOBULIN

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Purpose: Intravenous immune globulin (IVIG) has historically been dosed using actual body weight, although appropriate dosing for obese patients is unclear, as traditional studies have excluded this patient population. The pharmacokinetic properties of the drug show very little distribution into the fat and an increased volume of distribution due to an increase in body fluid volume in obese patients. Previous studies support that using an adjusted body weight in obese patients for dosing IVIG has no impact on efficacy or safety. The purpose of this investigation is to create and implement a protocol for the dosing of IVIG based upon adjusted ideal body weight. Additionally, this investigation will evaluate the contributions of provider order entry, clinical decision support, and financial impact as drivers for change.□□Methods: A retrospective chart review will be performed at four adult hospitals and the outpatient infusion centers at a large healthcare system. The medical records of 160 patients over a period of twelve months will be reviewed (approximately ten percent of the patient population receiving IVIG therapy). This sample will serve as the baseline population to determine the impact of implementing a dosing protocol. Medical staff and stakeholder support for the dosing protocol will be solicited with respect to the evidence base for change, ease of use of the protocol, and financial impact of the protocol. □ □Results/Conclusion: Data collection and analysis is ongoing, results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pharmacokinetic properties of IVIG therapy

List strategies to ensure the success of a novel dosing protocol

Self Assessment Questions:

Which pharmacokinetic property supports using adjusted body weight fo dosing IVIG?

A Absorption

B: Distribution

C: Metabolism

D: Excretion

All of the following promote successful adoption of a dosing protocol except:

A Positive evidence

B Ease of use

C Stakeholder resistance

D Cost savings

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-328 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF OUTCOMES IN A DIABETES EDUCATION GROUP UTILIZING MOTIVATIONAL INTERVIEWING

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Purpose: Several structured behavioral interventions for the management of diabetes have been studied over recent years due to the significant cost of managing the disease. Evidence strongly supports the use of structured behavioral interventions for education and management of diabetes, showing significant improvements in hemoglobin A1c. At the Rockford Community Based Outpatient Clinic (CBOC) affiliated with the William S. Middleton Memorial Veterans Hospital, the Diabetes Lifestyle Management group is a 2-hour group occurring over 3 sessions that provides patients with comprehensive education of diabetes disease state management. One of the integral components of the Diabetes Lifestyle Management group is a 1-hour portion of each group led by a mental health clinician using motivational interviewing (MI) to address lifestyle and behavior changes for diabetes management. The objective of this study is to compare diabetes outcomes including hemoglobin A1c, LDL cholesterol, and weight in patients completing the Diabetes Lifestyle Management group before and after the integration of MI.□□Methods: A retrospective records review of up to 300 patients completing a minimum 2 sessions of the Diabetes Lifestyle Management at the Rockford VA CBOC will be conducted. Data collected will include hemoglobin A1c, weight, LDL cholesterol, and diabetes disease-state knowledge in patients within 3 months prior to and 2 to 6 months following completion of the Diabetes Lifestyle Management group. Outcomes of patients completing the group prior to the integration of MI will be compared to the outcomes of patients who received MI as a component of the group.□□Results/Conclusion: Research is ongoing and preliminary results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify how structured behavioral interventions impact diabetes outcomes

Describe what motivational interviewing is and how it is used in a diabetes education setting

Self Assessment Questions:

Based on previous studies, structured behavioral interventions for diabetes have shown greater improvement compared to usual care for which of the following parameters?

A Body Mass Index

B: Hemoglobin A1c

C: Number of daily meter checks

D: All of the above

Motivational Interviewing (MI) is best described as:

A A technique for interviewing patients

B A form of Cognitive Behavioral Therapy (CBT)

C A way of guiding to elicit and strengthen motivation for change

D A method of tricking people into doing what they don't want to do

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-329 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE EFFECT OF DOCUMENTED BETA-LACTAM ALLERGIES ON EMPIRIC ANTIBIOTIC SELECTION AND SUBSEQUENT CLINICAL OUTCOMES

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Beta-lactam allergies are frequently reported in patients medical records often without any clarifying information regarding the specific allergic reaction. It has been reported that 80 - 90% of patients with a self-reported penicillin allergy do not have evidence of IgE-mediated antibodies to penicillin on skin testing. In addition, physicians avoid using beta-lactams in patients with documented beta-lactams allergies, which leads to increased healthcare costs, the use of inferior antibiotics, longe duration of treatment, and the development of bacterial resistance.

The primary objective is to compare the congruency of empiric antibiotic selection in all patients with documented non-IgE mediated beta-lactam allergies based on culture results. It is hypothesized that a greater proportion of patients who receive a non-beta-lactam will receive incongruent empiric antibiotics. Secondary objectives are to characterize the proportion of patients with unidentified beta-lactam allergies and to compare length-of-stay (LOS), duration of antibiotics, total antibiotic cost, and 14-day all cause mortality between patients who receive empiric beta-lactams versus those who receive other empiric antibiotic therapy. This study is a retrospective cohort analysis. Patients 18 years and older admitted to the University of Chicago Medicine from June 2010 - June 2012 with documented beta-lactam allergies and positive culture results will be included in this study. Data collected will include patient demographics, antibiotic data, and laboratory data to assess outcomes. Laboratory and antibiotic data collected will include cultures with specific sensitivities, antibiotic dose, route, frequency, and duration, and total antibiotic cost. The primary endpoint and baseline characteristics will be analyzed using chi-squared or Fischers exact test as appropriate. Secondary endpoints will be analyzed using chi-square for categorical variables or Students t-test for continuous variables.

Results/Conclusions: This study is still under investigation with final results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the signs and symptoms of an IgE-mediated allergy

Describe consequences of avoiding beta-lactams in patients with unconfirmed beta-lactam allergies

Self Assessment Questions:

Which of the following is a sign and/or symptom of an IgE-mediated allergy?

A Maculopapular rash
B: Anaphylaxis
C: Flushing
D: Nausea/Vomiting

Which of the following is a consequence of avoiding beta-lactams in patients with unconfirmed beta-lactam allergies?

A Decreased healthcare costs
B Use of superior antibiotics
C Shorter duration of treatment
D Development of bacterial resistance

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-657 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A PHARMACOECONOMIC ANALYSIS OF DRAWING A SEROTONIN RELEASE ASSAY (SRA) IN PATIENTS WITH A POSITIVE ELISA TEST FOR HEPARIN-INDUCED THROMBOCYTOPENIA (HIT)

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Purpose: HIT type II (HIT-II) is an immune-mediated disorder caused by formation of antibodies that attack the heparin-platelet factor 4 (PF4) complex leading to destruction of platelets, resulting in thrombocytopenia. There are several diagnostic tests used for HIT-II diagnosis. The most common and readily available test is the immunoassay, anti-PF4/heparin ELISA, which has high sensitivity, but low specificity. The SRA remains the gold standard diagnostic assay for HIT-II since it only detects antibodies capable of activating platelets. This assay is less readily available with a significantly longer turn-around time. Our current practice is to follow the 2012 CHEST guidelines and discontinue heparin products and start alternative anticoagulation (i.e. direct thombin inhibitors or Factor Xa inhibitors) with suspected HIT-II and order ELISA and SRA to test for HIT-II. If ELISA is negative, heparin products are restarted. If ELISA is positive, alternative anticoagulation is continued until the result of SRA is known.

Methods: A retrospective cohort of patients from Northwestern Memorial Hospital with suspected HIT -II who had an anti-PF4/heparin ELISA and SRA measured from January 2012 to the present will be evaluated. A sample size of convenience will be used. The primary aim of this study is to determine if drawing a SRA in patients with positive anti-PF4/heparin ELISA has an impact on anticoagulation treatment and subsequent costs of therapy. Study endpoints collected include: time from start of heparin product to sending ELISA, send-out date and return date of anti-PF4/heparin ELISA and SRA tests, alternative anticoagulant used, whether alternative anticoagulation was switched back to heparin in SRA negative patients, duration of alternative anticoagulation after a negative SRA test result, optical density value of the ELISA test, Results: Currently collecting data, results to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Explain the different diagnostic tests used to detect HIT.

Identify if alternative anticoagulation was properly used even after the SRA was reported.

Self Assessment Questions:

What is heparin induced thrombocytopenia type II?

A The anti-PF4/heparin antibodies attach to activated platelets, the p
B: Thrombocytopenia from a cause that is not drug-related.
C: Thrombocytopenia caused by liver dysfunction and patients post c
D: It is a type of dilutional thrombocytopenia.

Why is the serotonin release assay the gold standard diagnostic test for HIT-II diagnosis?

A It is an antigen assay that detects the presence of HIT antibodies.
B It is a functional assay that detects platelet activation by HIT antibo
C It is known to over diagnose HIT by detecting antibodies that are n
D It is a clinical probability scoring model to determine HIT.

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-330 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A TRANSITION CLINIC FOR HEART FAILURE PATIENTS AND THE IMPACT ON 30-DAY READMISSION RATES

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Focusing on improving healthcare quality and reducing costs, Centers for Medicare and Medicaid Services (CMS) is implementing an inpatient prospective payment system (IPPS), which results in payment withholdings, based on excessive hospital readmission rates. The IPPS is focused on improving readmissions for three specific diagnoses: heart failure, pneumonia, and acute myocardial infarction. The purpose of this study is to determine if a single visit to a transition in care clinic focused on medication reconciliation and patient education will decrease 30-day readmission rates in heart failure patients post hospital discharge. Prior to commencement, this study received approval from the Institutional Review Board at St. Ritas Medical Center. The institutions daily census report will be used to identify patients admitted due to heart failure (HF). Patients must be at least 18 years of age, diagnosed with HF, and hospitalized at the medical center due to their HF. Patients will be excluded if they are referred to the outpatient HF Clinic, on dialysis, exhibit psychological limitations or communication barriers, or discharged to a long-term care facility. The following data will be collected: patient age, gender, blood pressure, pulse, weight, current medications, reported symptoms, adverse event, pertinent laboratory results, readmission dates, and score from Morisky Medication Adherence Scale (MMAS-8). In addition, the number of recommendations made to the referring physician will be tallied. All patients eligible for the study will have the opportunity to meet with the pharmacist for an education session to reconcile home medications and to educate the patient on both the signs and symptoms of HF and their medications. Patients will complete the MMAS-8 to assess the impact o compliance on readmission rates at their education session as well. The results will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

List the three diagnoses that CMS is focused on improving 30-day readmission rates through IPPS.

Discuss the CMS withholdings that hospitals may experience over the next few years in respects to excessive readmission rates.

Self Assessment Questions:

Which of the following diagnoses is impacted by CMS 30-day readmission rates?

A Diabetes
B: Heart Failure
C: Stroke
D: Copd

What is the maximum withholdings that hospitals may experience based on excessive readmissions rates by FY 2015?

A 1%
B 3%
C 5%
D 10%

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-331 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISK FACTORS AND CLINICAL IMPACT OF ALEMTUZUMAB INFUSION REACTIONS IN ALLOGENEIC STEM CELL TRANSPLANT

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Purpose: The purpose of this study is to determine if alemtuzumab infusion reactions correlate with the incidence of GVHD at 100 days pos transplant and to identify risk factors for infusion reactions. Alemtuzumab is an anti-CD52 monoclonal antibody that is used in conditioning regimens for allogeneic stem cell transplant to prevent graft versus host disease (GVHD). It often causes infusion reactions but the risk factors and implications are not well described. Methods: This study is a retrospective chart review that will compare the outcomes of interest in patients who experience an infusion reaction to those that do not react . The primary objective of this study is to compare the incidence of GVHD at 100 days post-transplant in patients who did or did not experience an alemtuzumab infusion reaction. Secondary objectives will be to determine if infusion reactions correlate with clinical outcomes such as time to engraftment, infectious complications, mortality, etc. and to identify risk factors for infusion reactions. Results: We are in the process of collecting preliminary data and are awaiting IRB approval. Full data collection and analysis are pending.

Learning Objectives:

Review the pathophysiology of graft-versus-host disease

Explain the role of alemtuzumab in allogeneic stem cell transplant

Self Assessment Questions:

What is the proposed underlying mechanism of graft-versus-host disease?

A Recognition of donor T lymphocytes embedded in host tissue by h
B: Destruction of donor stem cell cells by host T lymphocytes
C: Recognition of host tissue by donor T lymphocytes leading to exag
D: Transformation of donor stem cells into cancerous cells which spre

Which of the following describes the rationale for using alemtuzumab for allogeneic stem cell transplants?

A Provide myelosuppression to eradicate cancer in the bone marrow
B Deplete donor T cells to prevent GVHD and deplete host T cells to
C Deplete donor T cells to prevent the transmission of CMV virus to
D Provide immunosuppression to overcome HLA mismatch between

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-332 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COST-EFFECTIVENESS ANALYSIS OF THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BACTEREMIA USING CLINICAL DECISION MODELING

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Purpose:□While vancomycin is considered the standard of care for methicillin-resistant Staphylococcus aureus (MRSA) bacteremia, the introduction of daptomycin provides an alternate therapy option. One difference between these agents is drug acquisition cost, as daptomycin acquisition cost is appreciably more than vancomycin. However, other costs associated with daptomycin, such as monitoring or management of adverse effects, may be less. We evaluated total hospital cost differences for MRSA bacteremia treatment regimens for patients treated at our institution using clinical decision modeling. We hypothesize that there is no difference in the cost effectiveness of daptomycin or vancomycin for the treatment of MRSA bacteremia.□□Methods:□We performed a cost effectiveness analysis o daptomycin versus vancomycin for MRSA bacteremia. All patients receiving daptomycin or vancomycin for the treatment of MRSA bacteremia between April 1, 2009 and June 30, 2012 were included. The Monte Carlo model was created using clinical outcomes from published clinical trials. . Model inputs regarding cost data come from retrospective review of patients experiencing each outcome in the decision tree. The decision analysis was conducted from the perspective of the hospital. The primary outcome was the incremental cost effectiveness ratio between the two medications. Secondary outcomes include a subgroup analysis of patients with renal dysfunction at baseline, by source of bacteremia, and severity of illness. A sensitivity analysis of drug acquisition cost was also done. Comparisons of continuous and categorical variables were made with Mann Whitney U test and chi squared test, respectively. □□Results:□Fifty-nine patients received daptomycin and vancomycin during the investigation window. A decision tree model was created. Analysis of total hospital costs associated with each outcome is ongoing and results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the factors that influence the cost of therapy of MRSA bacteremia.

Discuss the benefits of a cost effectiveness analysis for clinical decision making.

Self Assessment Questions:

The total cost of treatment of MRSA bacteremia is influenced by:

A The acquisition cost of the antibiotics used

B: The rate of adverse drug reactions

C: Patient specific characteristics

D: All of the Above

Cost effectiveness analysis____

A allows for the comparison of agents that have not been shown to b

B assumes that both treatments are equally efficacious

C can only be done if the efficacy data and cost data come from the

D is another name for cost minimization analysis

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-333 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF PHARMACY SERVICES IN A CARDIAC REHABILITATION PROGRAM

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Purpose: □□After an acute coronary syndrome, all eligible patients should be referred to a comprehensive outpatient cardiac rehabilitation (CR) program that focuses on exercise therapy, nutritional counseling, and risk factor management. A major piece of risk factor management is secondary prevention using medications. Pharmacists have the potential to play an important role in providing patients with valuable education on their new medications. The CR program at Parkview Regional Medical Center (PRMC) does not currently include medication education despite the fact that patients frequently have medication-related questions that are outside the expertise of the current CR staff. The objective of this study is to evaluate the effect of pharmacist-provided education as part of a standard CR program on patients perception of their overall understanding of their medication regimen.□□Methods:□□This is a prospective study of patients enrolled in the CR program at PRMC between 2/1/13 and 4/30/13. Medication counseling will be offered to subjects in two ways: group and individual counseling sessions. The group session will focus on cardiac medications that were likely started in response to a coronary event, including aspirin, anti-platelet agents, beta-blockers, ACE-inhibitors, ARBs, and statins. The individual session will be a complete review of all medications a subject is taking. Subjects may participate in either type of session, or both. A survey will be administered before and after the counseling sessions in which subjects will be asked to rate their personal knowledge and understanding of their medications. The primary outcome is the change in perception of overall understanding of the medication regimen as a result of pharmacist-provided education. Secondary outcomes will assess these changes in subjects that attended both types of counseling sessions versus those who attended only one session type.□□Results/Conclusions:□□Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify potential ways that pharmacists can impact cardiac rehabilitatior patients perception of medication knowledge

Describe the impact of comprehensive medication education on perceived medication knowledge of patients participating in a cardiac rehabilitation program

Self Assessment Questions:

All of the following are reasons that pharmacist-provided medication education may be beneficial for cardiac rehabilitation patients, except:

A The patients have recently started taking multiple new medications

B: The patients know everything about their medications

C: The patients are unaware of possible side effects from their medic

D: The patients want to play an active role in their healthcare

Which of the following medication classes would be more appropriate to discuss in an individual counseling session than a large group session?

A Anti-hypertensive agents

B Anti-platelet agents

C Cholesterol-lowering agents

D Anti-depressant agents

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-334 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATION RECONCILIATION AND TELECOMMUNICATION: A COLLABORATIVE APPROACH TO IMPROVE HEALTHCARE OUTCOMES IN HOSPITALIZED PATIENTS WITH HEART FAILURE

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Statement of Purpose: Medication reconciliation and patient education performed by the hospitals Heart Failure Interdisciplinary Team and a pharmacist post-discharge may reduce 30-day hospital readmission rates for patients admitted to the hospital with a primary diagnosis of systolic Heart Failure. Methods: The HF Interdisciplinary Team at St. Elizabeth Healthcare completed education and medication recommendations for patients admitted to the hospital with a primary diagnosis of heart failure from November 2012 to February 2013 (Group A). This group of patients was randomly selected for post-discharge counseling by a pharmacist (Group B), who recorded this intervention or an approved HF Checklist, which included medication compliance, daily weights, fluid and salt restriction, and a reminder of their follow-up appointment(s). Study analysis involved a comparison of 30-day readmission rates for the HF Interdisciplinary group (Group A), HF checklist group (Group B), and a randomly selected control group (Group C) of inpatients with HF from November 2011 to February 2012 (prior to the initiation of the Heart Failure Interdisciplinary Team). The primary outcome of this prospective study is all-cause 30-day hospital readmission rates. The secondary outcome includes the rate of patients readmitted to the hospital with heart failure within 30-days of their previous heart failure hospital admission. Summary of results to support conclusion/Conclusion: Data collection is ongoing. Final results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the Core Measures required by Joint Commission and Centers for Medicare & Medicaid Services for patients admitted to the hospital with a diagnosis of heart failure

Recognize reimbursement penalties incurred by hospitals who do not meet the criteria defined by the Hospital Readmissions Reduction Program

Self Assessment Questions:

Which of the following is a National Hospital Inpatient Quality (Core) Measure required by the Centers for Medicare & Medicaid Services and the Joint Commission for a Heart Failure hospital admissio

A Patient education upon admission

B: ACE or ARB continuation or initiation for patients with LVSD

C: Daily fluid and diet restriction including 2 Liters of fluid and 2 gram

D: Smoking cessation counseling

Which of the following statements is correct?

A The Affordable Care Act established the Hospital Readmissions R

B Readmission penalties for 2013 are derived from a ratio, which co

C The national average for 30-day heart failure readmissions is 19%

D Hospitals with a 30-day readmission rate for heart failure greater th

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-335 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A DIABETIC KETOACIDOSIS PROTOCOL AT AN ACADEMIC CENTER

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Purpose Diabetic ketoacidosis is an acute and potentially life-threatening metabolic complication of diabetes mellitus. Protocols designed for the standardization of DKA management have been researched to improve patient outcomes. On October 1, 2012, a P&T approved institution-specific DKA Protocol containing orders for intravenous fluids, electrolyte replacement, and a nurse-driven titration c an intravenous insulin infusion was implemented at Wishard Health Services. The purpose of this project is to evaluate treatment outcomes and adherence to the DKA treatment protocol at Wishard Health Services. Methods The study is a retrospective, observational chart review. Baseline data collected from January 2010 to April 2010 is being compared to post implementation data collected from November 2012 to April 2013. The study population includes patients 18 years or older with a diagnosis of DKA who receive an order for the DKA Protocol. Prisoners and pregnant women were excluded. The research proposal has been approved by the Indiana University - Purdue University Indianapolis IRB. The primary endpoint is time to calculated anion gap closure. Secondary endpoints evaluating efficacy, safety, and protocol adherence include: time to insulin initiation, normokalemia prior to insulin initiation, time to dextrose addition to fluids and appropriateness of fluid change, time to insulin therapy route change, overlap of at least one hour of intravenous and subcutaneous insulin administration, occurrence of hypoglycemic events, total blood glucose checks while on the insulin infusion, number of blood glucose checks completed within 15 minutes of the scheduled order, time from protocol order entry into computerized physician order entry (CPOE) system to initiation of the insulin infusion, total and number of incorrect titrations of insulin infusion rate, length of stay, and death. Results Data before and after protocol implementation will be compared and evaluated. Patient outcomes and quality assurance are under investigation with ongoing data collection and evaluation.

Learning Objectives:

Describe the pathogenesis and treatment goals of diabetic ketoacidosis (DKA)

Outline study results from before and after a DKA protocol implementation

Self Assessment Questions:

Reversing the acid base imbalance in DKA patients is primarily achieved by:

A Providing adequate fluid resuscitation and insulin therapy

B: Correcting potassium abnormalities

C: Administering bicarbonate to correct acidic conditions

D: Allowing time for the body to adjust and correct the acid base imba

What treatment outcomes have been reported in post DKA protocol implementation studies?

A Extended hospital lengths of stay

B Decreased time to the correction of the anion gap

C Decreased annual cost of insulin therapy

D Statistically significant decrease in documented hypoglycemic epis

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-336 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A STANDARDIZED PROCESS TO ANALYZE DATA AND IMPROVE SMART PUMP MEDICATION LIBRARIES

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Purpose: The Food and Drug Administration (FDA) and the Institute for Safe Medication Practices (ISMP) describe the benefits of utilizing smart pumps to decrease medication errors with intravenous infusions, but warn that smart pump libraries need to be continually updated to maximize benefit. Limited data is currently available on strategies for review and maintenance of infusion pump libraries. The purpose of this study is to determine strategies to analyze smart pump data to improve patient care, decrease errors, decrease alert fatigue, and maximize available technology Methods: This study was determined to be exempt from institutional review board approval on the basis of its quality improvement design. Since 2009, the Richard L. Roudebush Veterans Affairs Medical Center has utilized Symbiq (Hospira) smart infusion pumps. Hospira captures and reports the data from the hospitals infusion pumps. Infusion pump data reports were reviewed from the past three quarters. Review of data included: top ten hard upper and lower limit alert medications, top ten soft upper and lower limit alert drugs given on override, alert data comparing intensive care units to general medicine floors, percent of time medications were administered on override compared to the total number of times administered, and the ratio of overrides to reprograms/edits. These data points were analyzed and a standardized analysis tool was developed to provide a consistent and systematic strategy to review smart pump data. Beyond the specific data points listed above, no specific inclusion or exclusion criteria were implemented. Patient specific data or identifiers were not used or extracted during the entirety of this study. Results/Conclusions: Data collection and analysis are currently being performed. The results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Explain the importance of maintaining smart pump libraries on a regular basis

Recognize the need to have a strategy for reviewing alerts from smart infusion pumps

Self Assessment Questions:

What is the biggest concern with infusion pump libraries that are not reviewed and regularly updated?

A Alert fatigue

B: Patient safety

C: New medications not available in the infusion library

D: The technology will become obsolete

Benefits of a smart infusion pump analysis tool/strategy include

A All important alerts will be reviewed

B An objective way to review infusion pump data

C Documentation demonstrating the importance of infusion pump uti

D Both B and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-796 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF DISCHARGE MEDICATION RECONCILIATION AND EDUCATION BY PHARMACISTS

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Purpose: This process improvement project plans to expand existing services through pharmacist-driven discharge medication reconciliation on 3 East, a 30-bed cardiac nursing services unit, to improve the quality of patient care. The anonymous Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, specifically the "Communications about Medicines" section, will be reviewed before and after the pharmacist-driven medication reconciliation. The primary purpose of this project is to evaluate the "Communications about Medicines" scores on the HCAHPS survey before and after the pharmacist-driven medication reconciliation. The secondary objectives will include improved patient safety and improved compliance with medications. Methods: This study received Institutional Review Board approval. Patients will be excluded from the study if they are hospice or refuse counseling. Once a patient has discharge orders, the pharmacist will perform a full medication reivew, make interventions when necessary, and counsel each patient on all new medications initiated during the hospital admission. Ivent reporting in EPIC will be utilized to record number and type of interventions. The HCAHPS scores on the floor where pharmacist discharge counseling occurs will be compared to previously reported scores when a pharmacist was not responsible for discharge counseling. The two specific questions on the HCAHPS survey of interest for this project are: 1.) Before giving you any new medicine, how often did hospital staff tell you what the medicine was for? 2.) Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand? We will also measure the percentage increase in prescriptions filled at the hospital outpatient pharmacy to determine if patient access to medications improved. Results: Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the important role pharmacists play in medication safety and patient satisfaction with medical care.

Discuss the implementation of a pharmacist driven medication reconciliation discharge counseling service and its impact on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores.

Self Assessment Questions:

Which of the following statements is true?

A Pharmacists have been shown to reduce hospital readmissions ar

B: Patient understanding and compliance with medications will not be

C: There is no role for pharmacists when it comes to patient discharg

D: Hospitals should rely solely on nursing staff to provide all medicati

Which of the following statements is true regarding the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey?

A The HCAHPS survey is provided to nursing staff to evaluate pharn

B It is estimated that by 2013, hospital reimbursement will be based

C There are no questions on the HCAHPS survey that involve medic

D Results of the HCAHPS survey have no impact on the quality of ca

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-658 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF INTEGRATED PHARMACY SERVICES ON AN OUTPATIENT FAMILY MEDICINE CENTER: DETERMINATION OF PHARMACY RECOMMENDATION APPROVAL RATE AND PHYSICIANS' PERCEPTIONS OF INTEGRATED PHARMACY SERVICES

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Purpose: Pharmacists interventions and collaboration with physicians in the primary medicine setting has demonstrated improved patient compliance, outcomes, and disease state goal attainment. This interaction has lead to improved physician prescribing, while reducing healthcare costs and medication related hospital admissions. The development of outpatient clinics that have utilized pharmacy services have begun to exhibit the benefits of pharmacy recommendations on patient care and prescriber acceptance. In addition, clinics have started to establish the importance of the integrated role of pharmacy in the family medicine center. The current challenge is finding the appropriate balance of pharmacist involvement and acceptance during a midst of change and healthcare reformation. The aim of this study is to determine the effect integrated pharmacy services and pharmacy recommendations have in a family medicine center on physician approval and perception through varying levels of pharmacist exposure and recommendations.□□Methodology: A concurrent chart review conducted from August 2012 through January 2013 included current patients of the center for family medicine who were referred by family medicine center physicians. Patients not referred to pharmacy were excluded. Data collection included the type of service requested (direct consultation, indirect written referral, or indirect verbal referral), type of recommendation provided, and confirmation of recommendation approval. The data collection was conducted through direct interactions and indirect written progress notes sent to the physicians, as well as, through an online post perception survey submitted anonymously by prescribers. Descriptive statistics will be used to compare the types of recommendations to the overall prescriber approval rate and will be used to assess the post-physician perception survey of integrated pharmacy services. Prior to commencement, this study was classified as a quality assurance/quality improvement study reviewed and exempted from the Institutional Review Boards approval.□□Results and Conclusions: Remain under investigation and will be presented at Great Lakes.

Learning Objectives:

Recognize the pharmacy recommendation approval rate by prescribers based on the type of recommendation made by integrated phramacy services

Identify the perception integrated pharmacy services had on prescribers (post intervention)

Self Assessment Questions:

What type of intervention or recommendation had the highest rate of physician approval?

A Indirect written recommendation
B: Direct recommendation
C: Indirect verbal recommendation
D: Nurse recommendation

What did physicians and medical residents find to be the most beneficia service offered by integrated pharmacy services?

A Indirect verbal recommendations to providers
B Prescriber education
C Drug information question responses
D Direct patient care encounters

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-337 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DRUG SAFETY ALERT PROGRAM SCORECARD (DSAP SCORECARD) FOR FILTERING AND DISSEMINATING ACTIONABLE DRUG ALERT COMMUNICATIONS

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Purpose: Filtering and disseminating drug warnings with actionable recommendations directly into physician practice may help alleviate challenges faced, such as alert fatigue or how to manage affected patients. Our goal is to identify scorecard criteria for filtering drug warnings and communicating recommendations to ambulatory care providers within a group practice.□□Methods: The foundational criteria and weighting system were constructed from previous drug safety alerts communicated to physicians with an actionable patient list. These alerts were evaluated and distributed by Clinical Pharmacy Services (CPS) in coordination with Institute for Quality, Innovation, and Patient Safety (IQIPS) and Drug Evaluation Committee (DEC). A biostatistician was consulted to create a scoring structure, and the final criteria and weighting system were determined by CPS with guidance from lead IQIPS and DEC representatives. To evaluate usefulness and consistency, previous drug safety communications from the Food and Drug Administration (FDA) will be evaluated using the scorecard. The challenges of creating and implementing a scorecard will also be assessed. □□Results: The severity of a potential adverse drug event related to a medication should be weighed against the benefit of treating the disease in context prior to using the scorecard. When the risk is deemed unacceptable, the scorecard may provide guidance in distributing communications to providers. Preliminary results indicate the following criteria and weighting schema may provide the most beneficial results: severity of potential adverse drug event (35%), size o population (20%), level of evidence (15%), duration of medication use (12%), litigation risk (10%), and available alternatives (8%).
□□
Conclusions: Results may vary given lack of standardization in interpretation of drug warnings, clinical judgment, and the scoring process, but the criteria identified are key factors that should aid clinical judgment.

Learning Objectives:

Identify key factors that should be considered when releasing an actionable communication to healthcare providers regarding a drug alert

Recognize challenges in filtering and disseminating drug alert recommendations and communications to healthcare providers.

Self Assessment Questions:

Prior to using a scorecard to assess a drug alert and the potential for a communication to Marshfield Clinic providers what did we consider the most important to evaluate?

A Severity of the adverse event
B: Severity of the adverse event versus the benefit of treatment
C: Level of evidence supporting the occurrence of the adverse event
D: Litigation risk versus the benefit of treatment

Which of the scorecard criteria proved to be most challenging when we were determining an appropriate scoring structure?

A Severity of the adverse event
B Size of the population
C Level of evidence for the adverse event
D Duration of medication use

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-797 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF DEDICATED PHARMACY SERVICES IN THE EMERGENCY DEPARTMENT AT A LEVEL TWO TRAUMA CENTER

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Purpose: The emergency department (ED) is a fast paced environment that often causes for rapid action of health care providers. One study showed that there was a two-fold increase in medication errors in the Emergency Department when compared to inpatient services. The purpose of this study is to conduct a pilot project in the ED implementing dedicated pharmacist services to evaluate the impact with the goal of justification of sustained dedicated pharmacist services in this area in the future. Methods: This research project does not require Institutiona Review Board for approval as it does not involve testing in patients. A pilot program of ED pharmacy services will take place over a four week period and all interventions made will be documented. Prior to implementing dedicated pharmacy services in the ED, a satisfaction survey was sent to the physicians and nurses to capture current perception of pharmacy services in the ED. After implementation of dedicated pharmacy services, cost avoidance will be evaluated as well as a follow-up ED staff satisfaction survey. The cost avoidance data will be based on the interventions that the pharmacist documented while in the ED. Customer satisfaction through HCAHPS scores and satisfaction of ED staff will also be looked at to justify dedicated pharmacy services.

Preliminary Results: Prior to implementation of dedicated ED pharmacy services, 40% of survey respondents strongly disagreed with the statement "overall I am satisfied with pharmacy services". The most common interventions made by the pharmacist were clarification of patient allergies and assistance with dosing of medications.

Conclusion: The pharmacist was able to make multiple interventions tha resulted in both hard and soft dollars in cost avoidance/savings. Further conclusions will be drawn once final cost avoidance data is available and final ED satisfaction surveys are available.

Learning Objectives:

Define the role of an emergency department pharmacist.

Explain the impact that a pharmacist can have on the quality of patient care in the emergency department.

Self Assessment Questions:

Which of the following areas can an emergency department pharmacist make an impact?

A Assist in dosing medications
B: Perform medication reconcilliation
C: Educate patients on discharge medications
D: All of the above

What are the benefits of having a pharmacist in the emergency department?

A The pharmacist is more accessible to emergency department staff
B The pharmacist can easily respond to medical emergencies within
C The pharmacist can ensure that each admitted patient has a comp
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-659 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF EMPIRIC ANTIBIOTIC USE IN PATIENTS WITH A PENICILLIN, CEPHALOSPORIN, OR CARBAPENEM ALLERGY IN A COMMUNITY HOSPITAL SETTING

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Statement of Purpose: The purpose of this study is to evaluate clinical outcomes of patients with documented allergies that are prescribed antibiotics. The primary objective of the study is to assess the empiric (first 24 hours) antibiotic treatment choice in patients with community-acquired, hospital-acquired, ventilator-associated and healthcare-associated pneumonia (CAP, HAP/VAP/HCAP), intra-abdominal infections, or infective endocarditis and a documented penicillin, cephalosporin, or carbapenem allergy within the Community Health Network. This study will compare prescribed antibiotic therapy to IDSA and ATS guidelines. The secondary objectives of this study include duration of empiric regimen, duration of total antibiotic therapy, appropriate streamlining of antibiotics with available culture susceptibilities, type of allergy reported using Gell and Coombs classification, hospital length of stay (LOS), ICU admission and LOS, disposition (discharge/death), and in network readmission within 4 weeks. Statement of Methods: A retrospective chart review will be conducted at Community Health Network in Indianapolis, Indiana. The chart review will focus on patients with documented allergies to penicillins, cephalosporins, or carbapenems who are prescribed antibiotics and who are between the ages of 18 and 89 years with a primary discharge diagnosis (ICD-9) of CAP, HAP/VAP/HCAP, intra-abdominal infections, or infective endocarditis. These patients must have received at least one dose of an antibiotic within Community Health Network. The range of this review will be from January 1, 2010, to June 30th, 2012. Patients meeting these inclusion criteria will be included in the retrospective chart review. Patients will be excluded if they are < 18 years old or > 89 years old, prisoners, or pregnant. Descriptive statistics will be used to analyze the data collected and describe the patient population. Conclusions: Pending at time of submission.

Learning Objectives:

Identify appropriate treatment options for patients with documented penicillin, cephalosporin, or carbapenem allergies

Recognize when an alternative treatment may be necessary

Self Assessment Questions:

According to the IDSA, which of the following is an appropriate treatmen option for patients with CAP and a documented penicillin allergy?

A Vancomycin
B: Levofloxacin
C: Doripenem
D: Tobramycin

What is the cross reactivity of cephalosporins with penicillins?

A None
B 5-15%
C 20-40%
D >80%

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-338 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE EFFICACY OF THE ADULT INTENSIVE CARE AND MEDICAL/SURGICAL POTASSIUM REPLACEMENT PROTOCOLS IN A COMMUNITY HOSPITAL SYSTEM

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PURPOSE Previous studies have shown that appropriate use of electrolyte replacement protocols can increase the effectiveness of electrolyte replacement in hospitals. The primary objective of this study is to evaluate the efficacy of the Community Health Network potassium replacement protocol to ensure that hypokalemia in the intensive care and medical-surgical patients is being adequately managed.

METHODS A retrospective, observational study is being performed at Community Health Network in Indianapolis, IN. Prior to beginning data collection, this study was approved by the organizations institutional review board. Study subjects include male and female hospitalized patients age 18 - 89 years, in whom either the adult intensive care or adult medical-surgical potassium replacement protocol was initiated and dosed according to protocol between July 1, 2011 and June 31, 2012. Excluded patients include pregnant patients, prisoners, patients who received incorrect doses or doses at incorrect times according to the protocol, patients with renal failure (serum creatinine of > 2.0), diabetic ketoacidosis, or acid-base disturbances. Data collected includes demographic data, the protocol initiated, prescribing practitioner, initial potassium level, symptoms prior to replacement, potassium dose administered, potassium level following the replacement, and the patients magnesium level if available. For potassium levels not within therapeutic range following the administration of the replacement dose, additional doses required and corresponding potassium levels will be recorded. If the replacement dose results in hyperkalemia any associated adverse effects documented in the patients chart will be recorded. The type of nutrition the patient received and medications used that could alter potassium levels will also be recorded. RESULTS Data is currently being collected; results will be presented at the Great Lakes Regional Conference.

Learning Objectives:

Describe the complications associated with mild and severe hypokalemi

Identify appropriate administration techniques for replacement of potassium

Self Assessment Questions:

Which of the following is a common complication associated with severe hypokalemia?

A Nystagmus
B: Nausea
C: Sweating
D: Excess thirst

Which of the following statements is correct:

A IV administration rate of potassium should not exceed 5 mEq/hour
B Administration rates of IV potassium may safely exceed 30 mEq/h
C Cardiac monitoring is required if potassium administration rates ex
D IV potassium may be infused through a peripheral line at concentr

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-339 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST-LED INPATIENT GROUP EDUCATION ON MEDICATION KNOWLEDGE AND PATIENT SATISFACTION

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Purpose: The purpose of this study was to determine the impact of pharmacist-led inpatient group education on medication knowledge and patient satisfaction in patients with chronic medical conditions associated with a high level of hospital admissions. Methods: Patients, age 18 and older, admitted to specific internal medicine floors with a past medical history of congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or diabetes mellitus (DM) were eligible for inclusion in this prospective, quasi experimental study. Exclusion criteria included age less than 18, altered mental status, infection control precautions, limitations for transportation, pregnancy, and non-English speaking patients. Twice per week, patients admitted to the intervention floor were screened for a diagnosis of CHF, COPD, o DM and the most prevalent disease state that day was selected for education. Patients that met inclusion/exclusion criteria underwent a baseline knowledge assessment and then attended a 30-minute disease state group education session. Patients were given a follow-up medication knowledge assessment within 24 hours of group education. Patients admitted to the control floor were matched to the intervention group based on disease state. They completed the same baseline medication knowledge assessment but instead underwent individualized disease state education. These patients also completed a subsequent follow-up medication knowledge assessment within 24 hours of education. The primary outcome, change in medication knowledge from baseline, was compared between the intervention and control groups. Time spent on education was also assessed to determine the value of group education on pharmacists time. Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores were compared between the intervention and control units and to the results of the quarter prior to study initiation to determine the impact on patient satisfaction.

Learning Objectives:

Describe the process for recruiting and completing inpatient group education

Explain the potential benefits of group education as a method of patient education

Self Assessment Questions:

In order to appropriately complete a group education session, you must:

A Only include patients with independent mobility
B: Have a feasible location within the patient unit
C: Include all patients, regardless of infection control
D: Only discuss admitting diagnosis

Which of the following is a benefit of group education:

A Multiple perspectives from patient experiences
B Increasing ambulation of hospitalized patients
C More patients able to receive education on disease states
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-340 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OVERUSE OF PROTON PUMP INHIBITORS: AN OPPORTUNITY FOR PHARMACIST INTERVENTION

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Purpose□Research suggests that improper proton pump inhibitor (PPI) use increases health care costs and may increase the risk of Clostridium difficile infection (CDI). A medication use evaluation (MUE) conducted at our institution on patients treated for CDI revealed frequent inappropriate PPI use in this patient subset. The MUE results led to changes in PPI ordering via computerized physician order entry and to the implementation of a policy allowing pharmacists to discontinue inappropriate PPI therapy. This studys purpose is to further characterize PPI use at our institution and quantify the new protocols impact on reducing rates of inappropriate PPI use.□□Methods□After receiving approval from the institutions investigational review board (IRB), a retrospective chart review was conducted on 100 randomly selected patients who received four or more days of PPI therapy from April 1, 2012 to June 30, 2012. Patient medical records were reviewed to determine the proportion of patients that were appropriately and inappropriately prescribed PPIs during hospitalization. In addition, information was gathered on concurrent antibiotic use, concurrent histamine 2 receptor antagonist use, CDI status and treatment if applicable, hospital length of stay, intensive care unit length of stay, and demographics. After removing PPIs from admission order sets, adjusting how PPIs are ordered via computerized physician order entry, and implementing a policy allowing pharmacists to evaluate and discontinue inappropriate PPI therapy upon patient transfer from the ICU to the floor a second chart review of an additional 100 patients will be conducted to allow comparison to the initial group and to determine if a reduction in inappropriate PPI use was evident.□□Results□Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss consequences of inappropriate use of proton pump inhibitors.

Identify opportunities for pharmacists to assist in improving appropriate use of proton pump inhibitors.

Self Assessment Questions:

Adverse events associated with overuse of proton pump inhibitors include increased risk of C. difficile infection and increased risk of

A Gastric cancer
B: Alkalosis
C: Diverticulitis
D: Pneumonia

Which of the following statements regarding stress ulcer prophylaxis is true?

A All patients in critical care units should receive stress ulcer prophy
B Generally, only critical care unit patients should be considered can
C The duration of stress ulcer prohpylaxis should not exceed 7 days.
D Antacids provide sufficient protection against developing stress ulc

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-660 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A PROSPECTIVE, OBSERVATIONAL STUDY OF ANTIEMETIC USE FOR CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING AT MONROE CLINIC

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Purpose□Chemotherapy-induced nausea and vomiting (CINV) is a challenging concern for patients and leads to various complications. Adherence to guidelines may reduce nausea and vomiting. The primary objective of this prospective, observational study is to evaluate current practice regarding antiemetic use and adherence to NCCN guidelines.□□Methods□Patients on chemotherapy were identified as potential candidates for the study.□Based on the patients medical records, the following patients will be excluded: patients under 18 years old, concurrently receiving radiation, currently constipated, diagnosed with intestinal obstruction, emesis within 24 hours of chemotherapy, or with brain metastases. The following information was collected: patients name, identification number, age, gender, ethnicity, education level, current medications, past medical history, previous chemotherapy use, past history of nausea and vomiting prior to starting chemotherapy, history of alcohol use, history of motion sickness or morning sickness, type and stage of cancer, current chemotherapy regimen, and antiemetics prescribed for acute and delayed nausea and vomiting. The following percentages will be calculated: patients prescribed minimal, low, moderate, and highly emetogenic chemotherapy, adherence to NCCN guidelines, and patients experiencing acute and delayed nausea. Statistical analysis may include the chi-square test, Fishers exact test, and the test of two proportions. This study was approved by the Pharmacy and Therapeutics and Ethics Committees.□□Results/Conclusions:□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify potential strategies to address chemotherapy-induced nausea and vomiting.

Describe the benefits of pharmacist involvement in an oncology clinic.

Self Assessment Questions:

1.Which of the following is an appropriate anti-nausea regimen on day one (per NCCN guidelines) for patients initiated on a highly emetogenic chemotherapy regimen?

A Ondansetron 16 mg PO
B: Palonosetron 0.25 mg IV and dexamethasone 12 mg PO
C: Ondansetron 16 mg PO and dexamethasone 12 mg PO and aprep
D: Palonosetron 0.25 mg IV and fosaprepitant 150 mg IV

What are the possible benefits of involving a pharmacist in an oncology clinic?

A Improve patient satisfaction and decrease patient's co-payments f
B Improve adherence, develop institutional guidelines for managing s
C Reduction in the number of office visits.
D Reduce the cost of medications and increase use of oral chemoth

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-341 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE EFFICACY AND SAFETY OF GLARGINE-BASED VERSUS NPH-BASED INSULIN REGIMENS FOR TREATMENT OF TYPE 2 DIABETES: A RETROSPECTIVE REVIEW

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Purpose: In patients with type 2 diabetes, a combination of oral anti-diabetic drugs and basal insulin is commonly initiated after oral drug therapy alone has failed to achieve metabolic control. The addition of basal insulin reduces excessive hepatic glucose production between meals and overnight. Furthermore, the addition of rapid acting mealtime insulin with glargine, and regular acting insulin with NPH are necessary to ensure sufficient blood glucose control. Limited literature is available regarding the potential benefit of combining a rapid acting and/or regular insulin with basal insulin regimens. The purpose of this study was to evaluate the efficacy and safety of an insulin glargine based regimen compared to an insulin NPH based regimen in patients with type 2 diabetes currently on an oral anti-diabetic. □□Methods: This was a single-center, retrospective chart review. The primary objective was to evaluate the difference in HbA1c when comparing insulin glargine plus insulin aspart versus NPH plus regular insulin in patients concurrently on an oral anti-diabetic during a 24-month period. The secondary objective evaluated the safety profile with the presence of hypoglycemia. Hypoglycemia is defined as having plasma blood glucose < 70mg/dl while on insulin therapy with or without symptoms, or self-reported symptoms of hypoglycemia. Inclusion criteria included patients with a diagnosis of type 2 diabetes for greater than five years; with HbA1c above goal; on current oral anti-diabetic therapy and currently using insulin glargine, aspart, NPH, or regular insulin. Exclusion criteria included patients with a change to oral anti-diabetics; on insulin therapy other than glargine and aspart, or NPH and regular; with a BMI > 45kg/m2 ; or with a diagnosis of chronic kidney disease. Laboratory data, progress notes, and medical records were reviewed to determine HbA1c change in each study group. □□Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pharmacokinetic profile and difference in HbA1C lowering with glargine based versus NPH based insulin regimens.

Identify patients who may be considered candidates and may benefit from one basal insulin regimen over another.

Self Assessment Questions:

When compared to regular insulin, NPH insulin has a

A Slower onset of action, and longer duration of activity

B: Faster onset of action, and shorter duration of activity

C: Slower onset of action, and shorter duration of activity

D: Faster onset of action, and longer duration of activity

The benefits of a basal-bolus insulin regimen include which of the following:

A Offers a maximum of two injections per day

B Mimics endogenous insulin secretion patterns

C Insulin doses may be adjusted independently and are flexible to a

D B & c

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-342 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF DERMATOLOGIC REACTIONS ATTRIBUTED TO ALLOPURINOL IN PATIENTS WITH ACUTE MYELOID LEUKEMIA UNDERGOING INDUCTION THERAPY

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PURPOSE: Allopurinol is used to reduce plasma uric acid levels from tumor lysis syndrome (TLS) in patients with acute myeloid leukemia (AML) undergoing induction chemotherapy. Rash can be a dose-limiting side effect of allopurinol. Institutional recommendations were developed to limit the allopurinol therapy duration to periods of high TLS risk. The purpose of this project was to assess recommendation adherence rates and to compare the frequency of dermatologic toxicity attributed to allopurinol between adherent and non-adherent groups. □□METHODS: Adult patients with a diagnosis of AML who received standard induction chemotherapy with the 7+3 regimen and allopurinol therapy between January 1, 2009 and September 30, 2012 were identified retrospectively Patients were evaluated for the primary endpoint of prescriber adherence to institutional recommendations, which was assessed by duration of allopurinol therapy. The secondary endpoint was the frequency of rash and allopurinol discontinuation due to rash between the adherent and non-adherent group. □□RESULTS: Sixty patients meeting inclusion criteria were retrospectively identified. Allopurinol therapy was adherent to institutional recommendations for 16 patients (27%) and non-adherent for 44 patients (73%). Thirty-six patients (60%) were identified to have dermatologic reactions and 10 (28%) resulted in allopurinol discontinuation. Twelve patients in the adherent group had a dermatologic reaction. Allopurinol was discontinued in 2 cases. Twenty-four patients in the non-adherent group had a dermatologic reaction and 8 resulted in allopurinol discontinuation. The rate of dermatologic reactions in the adherent group was 75% compared to 55% in the non-adherent group (P=0.234). □□CONCLUSION: □A minority of patients received allopurinol therapy adherent to institutional recommendations. Statistical significance was not detected between the rates of dermatologic reactions in patients whose allopurinol therapy was adherent to institutional protocol compared to patients whose allopurinol therapy was not adherent. Low adherence rates and sample size are contributing factors for failure to detect statistical significance.

Learning Objectives:

Recognize the side effects of allopurinol

Recognize the role of allopurinol therapy in patients undergoing standard induction chemotherapy

Self Assessment Questions:

Which of the following is a common side effect of allopurinol:

A Hyperuricemia

B: Nystagmus

C: Rash

D: Priapism

The role of allopurinol therapy in patients undergoing standard induction chemotherapy is:

A To reduce white blood count

B To enhance the effects of induction chemotherapy

C To reduce tumor burden

D To reduce plasma uric acid levels from tumor lysis syndrome

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-343 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EMERGENCY PHARMACIST IMPACT ON ANTIBIOTIC PROPHYLAXIS IN OPEN FRACTURES

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Purpose: An open fracture is one in which the fracture fragments communicate through a break in the skin. Infection is the most common and serious complication after an open fracture, and can result in sepsis, loss of limb function, amputation or death. Prophylactic antibiotic therapy is a standard of care for all patients with open fractures due to the risk of infectious complications. Current guidelines from the Eastern Association for the Surgery of Trauma (EAST) provide specific recommendations for the provision of prophylactic antimicrobial therapy in the setting of open fractures. Multiple factors have been identified as increasing the risk for infection in this presentation, including increased time from injury to the time of antimicrobial initiation. This study was conducted to evaluate the impact emergency pharmacists (EPh) have on adherence to guideline recommendations for prophylactic antibiotics in those patients presenting to the University of Kentucky Emergency Department (ED) with an open fracture. □□Methods: A retrospective chart review of adults presenting with an open fracture to an academic medical center ED and subsequently admitted from January 1, 2008 - December 31, 2011 was conducted. Adherence to guideline recommendations for prophylactic antibiotic use was defined as appropriate antibiotic administration within 2 hours of admission to the ED. EPh impact was defined as patient presentation during the hours of clinical pharmacy services in the ED (13:00 to 23:00). Secondary objectives were reviewed to evaluate the potential implications of non-compliance including: infectious complications, hospital length of stay, intensive care unit length of stay, red blood cell units transfused, and number of surgeries performed on the open fracture.□□Results: Results will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Discuss fractures and prophylactic antibiotic guideline recommendations

Review primary literature on outcomes associated with non-compliance to guideline recommendations

Self Assessment Questions:

Which of the following is associated with increased risk of infection in patients with an open fracture?

A Open femoral fractures
B: Negative post-debridement-irrigation cultures
C: Use of prophylactic antibiotics
D: Increased time from injury to time of antibiotics

In patients presenting with a Grade I open fracture, it is recommended that prophylactic antibiotics cover which of the following:

A Gram negative bacteria
B Gram positive bacteria
C Clostridial species
D Both A and B

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-344 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TREATMENT OUTCOMES IN PATIENTS AT RISK FOR ALCOHOL WITHDRAWAL IN AN ACADEMIC TEACHING HOSPITAL: THE ETOH STUDY

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Purpose: The objectives of this retrospective cohort study are 1) to create and establish a mechanism for identifying patients at high risk for alcohol withdrawal syndrome early in their hospital stay, and 2) to establish a standardized approach for assessing and treating patients identified at being at risk for alcohol withdrawal. Specific aims of the project will be to compare outcomes in patients receiving fixed vs. symptom-triggered management with benzodiazepines, to determine factors that influence the initial management strategy, to identify clinical variables that independently correlated with severe alcohol withdrawal, and to assess nursing adherence to the Clinical Institute Withdrawal Assessment, revised (CIWA-Ar) monitoring tool.□□Methods: Electronic medical records of non-critically ill adult internal medicine patients at risk for alcohol withdrawal hospitalized at UC Health - University of Cincinnati Medical Center with CIWA-Ar ordered between October 1, 2009 and October 31, 2012 are being reviewed. Subjects admitted with primary diagnoses related to alcohol withdrawal were excluded. The primary outcome being assessed is therapeutic failure, defined as at least one of the following: in-hospital mortality, progression to alcohol withdrawal delirium, initiation of benzodiazepine continuous infusion, or oversedation. Other outcomes such as length of hospitalization and total benzodiazepine dose are also being collected and evaluated.□□Results: Study subjects were primarily Caucasian with history of alcohol abuse. Fixed management, the use of benzodiazepine administered at scheduled intervals, was prescribed in 31 (69%) of 45 patients included in the study thus far. Seven (22%) patients treated with fixed management experienced therapeutic failure due to oversedation; none of the patients in the symptom-triggered group experienced therapeutic failure. The mean length of hospitalization was 5 days. Data collection and analysis is still in progress.□□Conclusion: The conclusion of this study will be developed upon completion of data collection and analysis.

Learning Objectives:

Describe the clinical manifestations of alcohol withdrawal syndrome.

Identify patients at high risk for alcohol withdrawal syndrome and its associated complications.

Self Assessment Questions:

Which of the following is a symptom of alcohol withdrawal syndrome that can be objectively monitored?

A Anxiety
B: Agitation
C: Headache
D: Tremor

Which of the following has been identified as a predictor of severe alcohol withdrawal in previous literature?

A Undetectable blood alcohol level on admission
B Initial CIWA-Ar score > 10
C Elevated systolic blood pressure
D Uncontrolled diabetes

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-345 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A DISCHARGE PRESCRIPTION CAPTURE PROGRAM

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Purpose: It has been reported that 15 to 20% of hospital inpatients do not fill discharge prescriptions. As a result, delays in outpatient treatmen can lead to deterioration of the patients health, readmission to the hospital, and mortality. Many reports of pharmacist-led interventions have described improvements in patient satisfaction and increased hospital revenue. The objective of this project is to implement a discharge prescription capture program for patients to fill their medications before discharge at NorthShore University HealthSystem.

Methods: A multidisciplinary taskforce including nurses, physicians, physician assistants, social workers, discharge planners, pharmacists, and pharmacy technicians was created to assist with the design and implementation of this program. A pharmacy technician facilitated the filling of discharge prescriptions. A list of anticipated discharges was reviewed by the technician who then coordinated with inpatient pharmacists to identify patients eligible for the program. Once identified, the technician entered the patients hospital room, introduced the program to the patient, and asked whether the patients would like their prescriptions filled at the hospitals outpatient pharmacy. If patients indicated they would like to use this service, they were asked to provide demographic information, which was entered onto an authorization form by the technician. If patients indicated they would like their medications delivered to their room, the technician was responsible for coordinating medication counseling with a pharmacy student, resident, or pharmacist. Measures of success include pre- and post-implementatio outpatient pharmacy prescription fill rates, as well as financial impact. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss potential benefits to patients and healthcare organizations wher a discharge prescription capture program is implemented.

Identify strategies, workflows, and barriers to implementing a prescription rate capture program at a community hospital system.

Self Assessment Questions:

Which of the following parameters may be achieved in a successful discharge prescription program?

A Increased patient census

B: Decrease in employee expenses

C: Increase in percentage of prescriptions captured

D: Increase in prescription turnaround time

In which of the following ways could capturing discharge prescriptions positively impact a hospital or health system?

A Increase revenue

B Improve patient satisfaction

C Decrease pharmacy expenses

D Both A and B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-661 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF CARBOPLATIN TOLERABILITY BETWEEN DIFFERENT METHODS OF ESTIMATING CREATININE CLEARANCE

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Purpose The Calvert equation is the standard method to calculate doses of carboplatin and incorporates two key variables, a targeted area under the plasma carboplatin concentration time curve (AUC) and glomerular filtration rate (GFR). There is limited data assessing the impact of different GFR estimation methods on patient safety and outcomes. The objective of this study is to compare the incidence of dose reductions and delays of carboplatin-based chemotherapy regimens using the Cockcroft-Gault versus the Jelliffe method of estimating creatinine clearance. Methods This is a retrospective, single center, cohort study that has been accepted as exempt from review by the Western Institutional Review Board for research involving the collection of existing data and records. All data collected will be de-identified and maintained confidentially. Patients will be identified using the hospitals electronic medical database and through chart review. Data will be collected for patients receiving their first dose of carboplatin between June 2010 and November 2012. Patients will be excluded if they have contraindications to carboplatin, are less than 18 years of age require interruptions in carboplatin-dosing for non-toxicity reasons, or patients who died before completing the first cycle. Data collected will include: demographic information, cancer diagnoses, chemotherapy dosing regimen, carboplatin dose, target AUC, Jelliffe or Cockcroft-Gaul method used to estimate CLCr, SCr, CLCr, carboplatin dose held or reduced, need for colony stimulating factor, platelet and neutrophil nadir white blood cell count, percent segmented polymorphonuclear neutrophils, platelets, ANC, and BSA. A students t-test will be used to evaluate and compare parametric data. Chi square and Fishers exact tests will be used to evaluate and compare categorical data where appropriate. All tests will show statistical significance at a p value of less than 0.05. Results and Conclusions Data collection currently in progress. Preliminary results and conclusions to be presented.

Learning Objectives:

Discuss the standard method utilized to calculate carboplatin doses.

Review alternative methods used for estimating a patients glomerular filtration rate, and the benefits of each method for incorporation into the Calvert Equation.

Self Assessment Questions:

What is the primary benefit of using the Calvert Equation for calculating carboplatin doses?

A The Calvert Equation compensates for patients with pre-existing h

B: The Calvert Equation allows compensation for patient variations in

C: The Calvert Equation provides a range of appropriate doses for dif

D: The Calvert Equation expresses the total dose of carboplatin in mg

Which of the following is a disadvantage to using the Cockcroft-Gault formula in the Calvert equation for dosing carboplatin?

A It does not account for differences in gender.

B If using actual body weight, the Cockcroft-Gault formula overestim

C It typically underestimates renal function in elderly patients.

D There are no disadvantages to using the Cockcroft-Gault formula.

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-346 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF RECOMBINANT HUMAN ERYTHROPOIETIN USE IN JEHOVAHS WITNESSES UNDERGOING CARDIAC SURGERY AND IMPLEMENTATION OF A BLOOD CONSERVATION PROTOCOL

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Purpose: Refusal of blood products is a core value of the Jehovahs Witness faith. In cardiac surgery where the risk of blood loss is especially high, alternative strategies are required to preserve and enhance erythropoiesis in patients refusing to accept blood transfusions Literature suggests that recombinant human erythropoietin (rhEPO) can optimize the hemoglobin (Hgb) in patients that refuse blood products. However, there are no current guidelines for rhEPO dosing in the setting of Jehovahs Witness cardiac surgery patients. The purpose of this study is to (1) describe current rhEPO dosing strategies for Jehovahs Witnesses undergoing cardiac surgery and (2) compare the proportion o Jehovahs Witness patients who achieve a target Hgb after implementation of a blood conservation protocol to those without the protocol.□□Methods: A two-phase study will be conducted to evaluate the use of rhEPO to increase hemoglobin in Jehovahs Witness patients undergoing cardiac surgery. The first phase will involve a retrospective analysis of current dosing strategies of rhEPO to create a blood conservation protocol. The second phase will consist of a cohort analysis after implementation of the blood conservation protocol to investigate whether greater improvement is seen in patients Hgb after the order set is utilized. Data collection will include patient demographics, rhEPO data, lab data, and outcomes data. The primary objective of phase I is to describe current rhEPO dosing strategies for Jehovahs Witnesses undergoing cardiac surgery. Secondary objectives for phase I include describing changes in Hgb, time to target Hgb, adjunctive therapies received, and occurrence of bleeding or thromboses. The primary objective of phase II is to compare the proportion of Jehovahs Witness patients who achieve target Hgb by using a blood conservation protocol; secondary objectives include comparing adjunct medications used and occurrence of bleeding or thromboses. □□Results: to be presented□□Conclusions: to be presented

Learning Objectives:

Identify the significance of using recombinant human erythropoietin in Jehovahs Witness cardiac surgery patients

Discuss safety concerns associated with use of recombinant human erythropoietin to optimize post-operative hemoglobin

Self Assessment Questions:

Why would recombinant human erythropoietin be used specifically for Jehovahs Witness cardiac surgery patients?

A Increased risk of blood loss in cardiac surgery

B: Religious beliefs prevent acceptance of blood transfusion

C: Genetically predisposed to bleeding

D: Both A and B

What are the major adverse events associated with the use of recombinant human erythropoietin?

A Thromboses

B Pneumonia

C Liver dysfunction

D Nephrotoxicity

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-348 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REDESIGNED DRUG-DRUG INTERACTION ALERTS REDUCED MEDICATION ERRORS AND IMPROVED PRESCRIBING EFFICIENC

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Purpose: Computerized medication alerts, such as drug-drug interaction (DDI) warnings, are intended to improve decision-making at the time of prescribing and enhance patient safety. The alert interface influences prescribers perceptions of warnings, but the interface design of DDI alerts is largely unstudied. The objective was to conduct a simulation study to evaluate if design changes reduce medication errors and improve prescribing efficiency. □□Methods: We conducted a counterbalanced crossover study with outpatient prescribers to evaluate two different DDI alert designs. Redesigned alerts incorporated human factors principles; the original alert design served as the control. During the simulation, Veterans Affairs outpatient prescribers completed three fictional patient cases using both the original and the redesigned alerts. We used six clinically relevant DDI alerts of varying severity. Prior to data collection, each DDI was assigned correct and incorrect actions to evaluate medication errors. The primary outcome was medication errors defined as the number of incorrect prescribing actions divided by the number of alerts viewed. A secondary outcome was prescribing efficiency, defined as the time spent reviewing and resolving all alerts within one patient case. The original and redesigned alerts were compared using McNemars test for medication errors and Wilcoxon signed-rank test for efficiency.□□Results: Twenty prescribers (14 physicians, 4 pharmacists, and 2 nurse practitioners) completed patient cases using both designs. Medication errors were significantly reduced with redesigned alerts (26.1%) compared to the original alerts (47.4%; p=0.001). Median time spent on redesigned alerts was 52 seconds compared to 97 seconds for the original alerts (p<0.001), saving prescribers 45 seconds per case.□□Conclusions: Based on this simulation study, incorporating human factor principles into computerized medication alert systems may improve prescribing and patient safety. Evaluation of redesigned alerts in a clinical setting is needed to understand the effects during actual patient care.

Learning Objectives:

Describe the effect of redesigned drug-drug interaction alerts on medication errors and prescribing efficiency.

Recognize the features that may be incorporated into drug interaction alert design to improve prescribing.

Self Assessment Questions:

Resolving drug-drug interaction issues using redesigned alerts saved prescribers approximately _____ seconds per patient case?

A 10

B: 30

C: 45

D: 95

Which of the following features was incorporated in the new alert design to help improve prescribing efficiency?

A Presenting information in brief statements rather than a sentence f

B Removing the override justification requirement

C Removing drop down menus from alert interface

D Inverting the colors on alert interface so that the background is dai

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-798 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF A PHARMACIST-RUN MEDICATION MANAGEMENT SERVICE ON THE QUALITY OF LIFE OF PATIENTS WITH HEART FAILURE IN THE AMBULATORY CARE SETTING: A PILOT STUDY

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This pilot study aims to determine the feasibility of a pharmacist-led medication management service for patients with heart failure (HF) within the ambulatory care setting. The study is a prospective trial whereby adult patients with HF are referred to the pharmacist who is working under the direct supervision of the physicians. Patients who reside in a skilled nursing facility or with marked dementia or psychological disorders that would hinder frequent follow up and patient education will be excluded. The pharmacists responsibilities include initiation, dose adjustment, and discontinuation of medications for the treatment of HF as recommended by the guidelines. The primary endpoints will be the referral and retention rates. Secondary endpoints include the change in quality of life (QOL), assessed by the Minnesota Living with Heart Failure Questionnaire (MLHFQ), and the difference in the proportion of patients that are on a medication regimen recommended by the guidelines from the beginning to the end of the study. The study period commenced on December 10th, 2012 and will end on February 28th, 2013. Of the 24 patients with a diagnosis of HF who have visited the clinic thus far, only 2 have been referred to the medication management service. However, only 1 patient has provided consent to be included in the study. Thus, the referral rate is 0.08%, and the retention rate is 100%. The low referral rate could be attributed to a variety of factors including skepticism from physicians, lack of resources, or ineffective publicity efforts. Despite the results of this pilot study, the presence of a pharmacist in the ambulatory care setting has led to increasing referrals for medication reconciliation and counseling and multidisciplinary collaboration in the management of medication therapy.

Learning Objectives:

Define the stages of the collaborative working relationships model

Recognize how a patients health related quality of life is assessed by the Minnesota Living with Heart Failure Questionnaire

Self Assessment Questions:

The Minnesota Living with Heart Failure Questionnaire assesses which of the following aspects that contribute to a patients quality of life?

A Socioeconomic, emotional, and mental health

B: Emotional, physical, and overall health

C: Emotional, socioeconomic, and social health

D: Physical, social, and overall health

Over the past 2 years, a physician and a pharmacist have been working collaboratively to manage patients medication regimens. The pharmacist regularly reviews patient charts and provides clinical re

A Stage 1: Professional recognition

B Stage 2: Exploration and trial

C Stage 3: Professional relationship expansion

D Stage 4: Commitment to the collaborative working relationship

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-347 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RATES OF FEBRILE NEUTROPENIA WITH SAME DAY VERSUS NEXT DAY PEGFILGRASTIM AFTER CYCLOPHOSPHAMIDE, DOXORUBICIN, VINCRISTINE, PREDNISONE (CHOP) WITH OR WITHOUT RITUXIMAB

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Background: Febrile neutropenia (FN) is a common complication of myleotoxic chemotherapy that can substantially decrease quality of life and increase healthcare costs. A granulocyte colony stimulating factor (G-CSF) is used to increase neutrophil production to reduce FN risk. However, a CSF administered on same day as chemotherapy can worsen and prolong neutropenia. Current guidelines recommend pegfilgrastim, a G-CSF, be administered 24 to 72 hours after completion of myelotoxic chemotherapy. Since prescribing patterns at our institution continue to vary with regards to timing of G-CSF therapy, this project will determine whether patients treated according to recommendations outlined in the guidelines exhibit improved safety outcomes.

Objective: To evaluate incidence of FN in patients receiving pegfilgrastim on same day vs. next day or beyond of CHOP with or without rituximab. Methodology: This is a retrospective, single center, nonrandomized, cohort study. Adult non-Hodgkins lymphoma patients who received pegfilgrastim 6 mg SC on day 1 or beyond of CHOP with or without rituximab (once per 21-day cycle) are included. Excluded patients include those who received concomitant chemotherapy in addition to CHOP with or without rituximab. The primary endpoint is incidence of FN. The secondary endpoints include duration of grade 4 neutropenia, time to grade 4 neutropenia, incidence of FN after first chemotherapy cycle, total duration of intensive care unit (ICU) and non-ICU stays, duration of IV antibiotic therapy, and incidence of chemotherapy dose delays and/or reductions. Study enrollment is anticipated to be about 150 patients in order to achieve a sample size of 652 chemotherapy cycles calculated for power analysis. Fishers Exact test with a two-sided alpha of 0.05 will be used to assess the primary outcome. Students t-test or Mann- Whitney U test will be used to evaluate continuous data as appropriate. Results and Conclusions: To be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss whether prescribed time of pegfilgrastim administration in relation to scheduled chemotherapy affects patient outcomes

Describe the study methodology and report results

Self Assessment Questions:

According to ASCO guidelines, when should granulocyte colony stimulating factor therapy be administered in relation to myelotoxic chemotherapy?

A Simultaneously

B: Less than 24 hours before initiation of chemotherapy

C: 24-72 hours after completion of chemotherapy

D: At least 5 days after completion of chemotherapy

What is the definition of febrile neutropenia according to the NCI common toxicity criteria?

A ANC <100/mm3 and a single temperature of >38.3 degrees C

B ANC <1000/mm3 and a single temperature of >38.3 degrees C

C ANC <1000/mm3 and a sustained temperature of >= 38 degrees C

D B and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-349 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

LOW-DOSE KETAMINE INFUSION IN ADULT PATIENTS WITH SICKLE CELL DISEASE - IMPACT ON MANAGEMENT OF ACUTE PAINFUL EPISODES

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Purpose: The purpose of this study is to assess the utility of a low-dose ketamine infusion for treatment of the acute painful episode, a complication of sickle-cell disease that is oftentimes a therapeutic challenge. The primary objective is to determine intrapatient effects of a low-dose ketamine infusion, used adjunctively with intravenous opioid therapy, in lowering opioid requirements in adult patients experiencing a sickle-cell pain crisis. The secondary objectives are three-fold: To determine the effect of low-dose ketamine infusion in reducing total hospital days; To characterize adverse reactions possibly due to the ketamine infusion; To identify the patients most likely to benefit from the use of a low-dose ketamine infusion, and the most effective dose.□Methods: This is a retrospective cohort study utilizing data from electronic medical records of patients at the University of Illinois Hospita & Health Sciences System. Sickle-cell disease patients treated with ketamine during an admission for acute vaso-occlusive pain crisis will be identified. For the subjects meeting inclusion criteria, the previous admission for vaso-occlusive crisis (when ketamine was not use) will be identified as well. Pain management on these two visits will be compared, with particular focus on daily and total opioid consumption, ketamine use, and hospital stay duration.□Results and conclusions: Data collection and analysis is currently ongoing.

Learning Objectives:

Describe the current body of evidence that supports a potential role for low-dose ketamine infusion in the treatment of sickle-cell crisis

Identify circumstances for which low-dose ketamine infusion would be appropriate for pain management during a sickle-cell crisis

Self Assessment Questions:

Which of the following is NOT an established benefit of using low-dose ketamine infusion for conditions such as neuropathic, oncologic, and post-operative pain?

A It reduces total opioid consumption

B: It has low abuse potential

C: It reduces opioid-induced hyperalgesia

D: It does not carry a risk of respiratory depression

A 23 year old African American male with homozygous SS disease, new to your hospital system, presents to the emergency department with a chief complaint of severe pain in the lower back and hips. He

A When taking his outpatient pain medications as maximally prescrit

B When receiving hydromorphone 1.5mg IVP every 6 hours as need

C While on a hydromorphone PCA delivering a max cumulative daily

D While on a morphine PCA delivering a max cumulative daily dose

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-351 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF PHARMACIST VERSUS USUAL MEDICAL CARE PRESCRIBING HABITS FOR PERIPROCEDURAL BRIDGING WITH ENOXAPARIN IN A VETERANS AFFAIRS MEDICAL CENTER

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Statement of the purpose: □To determine the level of appropriateness of bridging anticoagulation for established warfarin patients undergoing planned procedures between pharmacists in an outpatient Anticoagulation Clinic and usual medical care (physicians, nurses, etc.). □□

Statement of the methods used: □Two comparator groups comprise this retrospective chart review: patients who received periprocedural bridging anticoagulation from pharmacists in 2011 and patients who received periprocedural bridging anticoagulation from usual medical care in 2009. Patients on warfarin therapy ≤ 90 days were excluded.□□The primary endpoint is the rate of appropriate prescribing of periprocedural bridging anticoagulation with enoxaparin based on warfarin indication between pharmacists and usual medical care per the American College of Chest Physicians Antithrombotic Guidelines 8th edition. Secondary endpoints include rates of appropriate enoxaparin dosing and choice to bridge based on procedure type, duration of bridge post-procedure, percentage of patients with a therapeutic INR on last day of bridge, and complication rates between groups.□□Summary of (preliminary) results to support conclusion:□A total of N=80 patients (n=40 pharmacist group n=40 usual medical care group) have been investigated. Preliminary analyses reveal 80% of pharmacist-followed patients and 72.5% of usua medical care-followed patients received appropriate bridging anticoagulation per indication for warfarin. Pharmacists and usual medical care provided similar rates of appropriate periprocedural bridging as indicated by procedure type (100% vs 92.5%, respectively). Appropriate enoxaparin dosing was more often provided by pharmacists than usual medical care (95% vs 72.5%, respectively), and INR on last day of bridge was more often therapeutic amongst pharmacist-followed patients (77.5% vs 45%, respectively). □□Conclusions reached:□Preliminary data reveals that in comparison to usual medical care, pharmacist-followed patients were more often prescribed appropriate enoxaparin doses and more often had therapeutic INRs on the last day of bridge. Final conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Identify when to provide patients with appropriately dosed periprocedura enoxaparin bridging anticoagulation based on indication for anticoagulation and type of procedure.

Recognize surgeries or procedures associated with increased risk of bleeding that would require temporary interruption of vitamin-K antagonist therapy.

Self Assessment Questions:

JJ is a 68 year old WM who presents to the anticoagulation clinic for routine INR check. He has been on warfarin since his (mechanical) mitral valve replacement surgery in 2009. His current warfarin

A Hold warfarin 4/26-4/30. Bridge with enoxaparin 90 mg q12 hrs.

B: Hold warfarin from 4/26-4/30. Bridge with enoxaparin 90 mg daily.

C: Hold warfarin from 4/28-4/30. Do not bridge.

D: Continue warfarin 5 mg daily through the procedure.

Which of the following procedures is associated with a high risk of bleeding according to CHEST 2012?

A Root canal

B Cataract surgery

C Transurethral prostate resection (TURP)

D Dermatologic surgery

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-350 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN-INDUCED AND PIPERACILLIN-TAZOBACTAM-INDUCED ACUTE NEPHROTOXICITY: A RETROSPECTIVE REVIEW

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Purpose: The purpose of this research project is to determine the rate of acute kidney injury (AKI) in non-intensive care unit (ICU) patients who have been treated with vancomycin alone, piperacillin-tazobactam alone or a combination of vancomycin and piperacillin-tazobactam. Additionally, patient or medication-specific risk factors associated with an increased risk for developing nephrotoxicity while on the combination regimen will be identified.□□Methods: This retrospective study was granted exempt status by the St. Elizabeth Healthcare Institutional Review Board. Patients were identified from June 2012 through December 2012. Patients included were at least 18 years old and had received vancomycin alone, piperacillin-tazobactam alone, or the combination for at least 48 hours. It was determined that a sample size of 50 patients in each arm would provide an alpha of 0.05 and a beta of 90 based on documented incidences of AKI determined by previous studies. AKI in this study is defined as an absolute increase in serum creatinine (SCr) of 0.5 mg/dL or a 50% increase from baseline. Exclusion criteria includes patients with a baseline SCr of greater than 2 mg/dL or documented kidney disease, an ICU stay, or concomitant use of defined nephrotoxic medications (aminoglycosides, IV contrast dye, amphotericin B, cyclosporine, tacrolimus, or vasopressors). Data collected from all patients, if available, included demographics (age, sex ethnicity, height, weight), baseline SCr, and highest SCr during treatment or up to 72 hours after completion of specified antibiotic therapy. Patients receiving the combination therapy had daily dose and duration of each medication, as well as vancomycin troughs, collected. □□

Results/Conclusions: Data collection is in its final stages and results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the current consensus on the mechanisms of action of acute kidney injury for both vancomycin and piperacillin-tazobactam

List the factors which could lead to an increased risk of acute kidney injury when using vancomycin and piperacillin-tazobactam

Self Assessment Questions:

Which of the following antibiotics is correctly paired with its proposed mechanism of action of acute kidney injury?

A Vancomycin – Osmotic Nephrosis

B: Piperacillin-tazobactam – Acute interstitial nephritis

C: Vancomycin – Tubular obstruction

D: Piperacillin-tazobactam – Acute tubular necrosis

Which of the following is a possible risk factor for developing acute kidney injury in conjunction with vancomycin and piperacillin-tazobactam

A Shorter duration

B Younger age

C Less frequency

D Higher doses

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-799 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF INTRA-ARTERIAL VERAPAMIL ON POST-ANGIOGRAM HEMODYNAMICS

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Statement of Purpose: Delayed cerebral ischemia (DCI) is common afte aneurysmal subarachnoid hemorrhage (aSAH). The management of DC is complex and dynamic. Novel treatments include endovascular interventions like balloon angioplasty and vasodilator infusions. Numerous vasodilators have been studied, including nitric oxide, papaverine, and calcium channel blockers such as nicardipine and verapamil. Small retrospective studies with intra-arterial verapamil (IAV) utilized doses from 3 to 5 mg with minimal effects on hemodynamics. More recent studies used larger doses (15 to 55 mg) in order to increase success with severe vasospasms but reported significant decreases in mean arterial pressure and increased vasopressor requirements. This study aims to build on the current literature available with an emphasis on vasopressor requirements. Additionally, this will be the first study to use a comparator group with the aim of elucidating the true correlation o IAV administration to post-angiogram outcomes while minimizing other physiological confounders.□□Methods: This is a retrospective cohort study approved by University of Illinois Institutional Review Board and conducted at University of Illinois Hospital and Health Sciences System Neurosurgical Intensive Care Unit (NSICU). The cohort will include patients who have undergone angiogram and received IAV. Those who have undergone angiogram but failed to receive IAV will be designated as controls. Adult patients (>18 years) hospitalized for aSAH admitted to the NSICU between August 2010 and 2012 who were ventilated and sedated with CERNER orders for IAV will be included. Exclusion criteria include patients with primary neurological diagnoses other than aSAH, patients undergoing angiography for the initial aneurysm treatment (clipping/coiling), prisoners, and pregnancy. The primary objective is to define the changes in blood pressure, mean arterial pressure, intracranial pressure, and heart rate, and treatment modalities used to manage hypotension post-angiogram.□□Summary and Conclusion: Data collection and analysis are ongoing.

Learning Objectives:

Review the published literature regarding the use of intra-arterial verapamil in aneurysmal subarachnoid hemorrhage

Identify appropriate monitoring parameters for patients who receive intra arterial verapamil

Self Assessment Questions:

Which prevention/treatment modality for delayed cerebral ischemia has been proven effective in prospective, randomized controlled trial(s)?

A Triple H Therapy

B: Oral Nimodipine

C: Intra-arterial Verapamil

D: Intra-arterial Nitric Oxide

Which of the following BEST represents previous trials with intra-arterial verapamil (IAV)?

A The usual dosing range of IAV is 3 to 5 mg per intervention

B The largest study detailed the experience of IAV in over 100 patier

C Hemodynamic changes have been reported, especially at larger d

D Previous studies on the use of IAV have used a comparator arm to

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-352 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATION THERAPY MANAGEMENT CONTINUUM OF CARE SERVICE TARGETING PATIENTS AT HIGH RISK FOR MEDICATION-RELATED READMISSION AT DISCHARGE

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Background: Healthcare systems nationwide are plagued by high readmission rates. The risk for hospital readmission is increased by medication-related problems, nearly half of which may be preventable. Many of these problems arise during transitions of care, and include medication non-adherence, lack of post-discharge follow up, lack of medication management, and adverse drug reactions. One potential strategy for combating medication-related readmissions is the provision of Medication Therapy Management (MTM) services by a pharmacist after discharge.□□Purpose: The purpose of this project is to develop and implement a sustainable MTM service targeting patients at high risk for medication-related readmission at Froedtert Hospital. The MTM clinic will be developed in conjunction with the Medication-Related Readmission Assessment Tool (MRRAT), which will assign a risk score to hospital inpatients on various general medicine teams.□□Methods: This is a descriptive, single center, non-randomized 6 week pilot project at Froedtert Hospital, a 500 bed academic medical center. Patients who are considered high risk for a medication-related readmission per MRRAT score will be referred to the MTM clinic or the pharmacist in thei previously established medical home. An appointment in the MTM clinic will be established as soon as possible following hospital discharge. The MTM clinic will be staffed by pharmacy residents. All visits will be documented in the electronic medical record and interventions communicated to the primary care provider. MTM services will be billed to the patients insurance. Pilot project outcomes include patient show rate, physician referral and intervention acceptance rate, and patient satisfaction scores. Future efforts will assess impact on clinical outcomes and financial justification. □□Results/Conclusion: The pilot project will be conducted in February through April 2013; preliminary results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify the tool used to determine patient risk for medication-related readmission.

Recognize the individuals responsible for staffing the MTM clinic.

Self Assessment Questions:

Which of the following is the tool used to determine patient risk for medication-related readmission?

A Medication-Related High Risk Assessment Tool (MRHRAT)

B: Medication-Related Readmission Assessment Tool (MRRAT)

C: Medication Assessment of Readmission Risk Tool (MARRT)

D: Medication-Related Risk for Readmission Tool (MRRRT)

Which of the following individuals are responsible for staffing the MTM clinic?

A Clinical staff pharmacists

B Physician assistants

C Pharmacy residents

D Medical residents

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-662 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE REVIEW OF LIPID MANAGEMENT OF SPINAL CORD INJURY PATIENTS AT THE RICHARD L ROUDEBUSH VETERANS AFFAIRS HOSPITAL

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Purpose:□Cardiovascular Heart Disease (CHD) is a leading cause of morbidity and mortality in the American population as a whole. In spinal cord injury (SCI) patients, CHD is the leading cause of death in patients more than 30 years after injury. The increased risk could be due to changes in the body composition and inactivity of SCI patients that lead to metabolic abnormalities that accelerate the appearance of CHD. High density lipoprotein (HDL) levels are significantly lower in SCI patients and it has been shown that for each 1mg/100mL decrease in HDL, the risk of cardiovascular event will increase by 2% in men.□□The purpose of this study is to characterize the spinal cord injury patient in regards to cholesterol medications, lipid panel goals, and risk for cardiovascular events. The results may support previous study outcomes and guide treatment of hyperlipidemia and cardiovascular disease more effectively in the spinal cord injury patient.□□Methods:□The design is a retrospective chart review of demographic data (age, weight, height, race), spinal cord injury description (time since injury, level, and complete or incomplete), fasting lipid panel, pertinent medications, family history, adverse events, and cardiac events or admissions. Data was collected on 101 patients who were seen in SCI clinic between the dates of January 1, 2010 to December 31, 2011. Descriptive analyses will be used to evaluate demographic data. Chi Square test will be used to analyze nominal data and a t-test will be used for continuous data. This information will help to describe the lipid profile and management o spinal cord injury patient cared for by the Richard L. Roudebush VA Medical Center.

Learning Objectives:

Identify the cardiovascular risk factors most common to spinal cord injury patients

Recognize the most common lipid abnormality seen in spinal cord injury patients

Self Assessment Questions:

The most common lipid abnormality in the spinal cord injury population i

A Ldl

B: Vldl

C: Hdl

D: Triglycerides

2.The following characteristics are true in describing spinal cord injury patients in regards to cardiovascular risk, except:

A Quadriplegic patients commonly have higher blood pressure than

B Cardiovascular events may go unnoticed

C Body composition changes after SCI

D CHD is the leading cause of death in patients who are 30 years po

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-353 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

GLYCEMIC CONTROL OF POST-SPINAL SURGERY PATIENTS UTILIZING A PHARMACIST-MANAGED BASAL BOLUS INSULIN PROTOCOL

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Purpose: Glycemic control has been a continuous challenge for hospitals. Many considerations need to be addressed to determine appropriate insulin regimens. In efforts to better manage inpatient blood glucose levels, a pharmacy-managed basal bolus protocol was initiated in April of 2012 at Ingalls Memorial Hospital in a pilot group of spinal surgery patients. This protocol allows pharmacists to utilize basal and bolus scheduled insulin regimens with a correctional insulin sliding scale to prevent surgical complications. The results of this retrospective study will be used to guide changes to the current basal bolus protocol.

Methods: All spinal surgery patients at Ingalls Memorial Hospital during or after April 2012 who were prescribed the basal bolus insulin protocol were reviewed. The basal insulin prescribed between April and September was insulin detemir and insulin glargine was prescribed after October to allow for comparisons to be made regarding differences in safety and efficacy. Insulin lispro or insulin regular have been used for scheduled bolus doses and correctional sliding scales, as determined by pharmacy. The following stratifications were used to further evaluate if adjustments should be to the current protocol including current steroids use, age greater than 65, body mass index greater than 30, and home regimens including oral hypoglycemic agents. Achievement of glycemic goals within 24 hours post-surgery, total daily dose requirements initially versus at discharge, and the number of documented hypoglycemic events were reviewed. Results/Conclusions: Results and conclusions to be presented at Great Lakes Residency Conference.

Learning Objectives:

Explain the role of correctional sliding scale regimens in coordination with basal bolus regimens.

Recall appropriate target blood glucose levels based on the January 2013 Standards of Medical Care in Diabetes for non-critically ill inpatients.

Self Assessment Questions:

Correctional sliding scale insulin is defined as:

A Bolus insulin given on a scheduled basis in addition to scheduled b
B: Bolus insulin given on an as needed basis in addition to schedulec
C: Basal insulin given on a scheduled basis in addition to scheduled b
D: Basal insulin given on an as needed basis in addition to schedulec

Based on the January 2013 Standards of Medical Care in Diabetes, non critically ill inpatients treated with insulin should have a random target blood glucose levels of less than:

A 200 mg/dL
B 170 mg/dL
C 140 mg/dL
D 180 mg/dL

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-354 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN ASSESSMENT OF OUTPATIENT HEPATITIS C MANAGEMENT IN A VETERANS AFFAIRS MEDICAL CENTER

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Statement of Purpose: The objective of this study is to assess the management of hepatitis C (HCV) in a hepatology clinic at the Richard L Roudebush Veterans Affairs Medical Center. The primary endpoint of this study is the comparison of medication adherence rates based on medication possession ratios versus adherence rates of other Veterans Affairs medical centers. Secondary endpoints include identification of reasons for withholding medication therapy at initial visit, discontinuation rates between boceprevir and telaprevir, sustained virologic response (SVR) rates between boceprevir and telaprevir, and adverse drug reactions (ADR) to boceprevir and telaprevir. Statement of Methods: This is a retrospective chart review of approximately 50 patients enrolled in the hepatology clinic between January 2012 and June 2013. The inclusion criteria are patients > 18 years of age, a genotype 1 HCV diagnosis, and referral to a clinical pharmacist for possible HCV treatment. No specific exclusion criteria were used. Prior to initiation of this study, approval through both the Institutional Review Board of Indiana University Purdue University of Indianapolis and the VA Research and Development Committee was obtained. The following baseline data were collected from the patients electronic medical record age, gender, weight, date of referral, HCV genotype, IL-28 genotype, baseline HCV RNA, stage of fibrosis and date of biopsy, liver ultrasound results, prior treatment with peginterferon and ribavirin, prior psychiatric diagnoses, urine drug screen results, approval or disapproval for treatment, and treatment regimen. Compliance, HCV RNA at weeks 4, 8, 12, 24, 36 and 48, SVR rates, discontinuations prior to course completion, notable ADRs, and a weekly CBC (hgb, platelets, neutrophils) and BMP (creatinine, glucose, potassium) were also collected. Results/Conclusions: Preliminary results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the two current protease inhibitors approved for the treatment of hepatitis C and the challenges that these medications present.

Explain common adverse effects while on triple therapy and appropriate adjustments to combat these.

Self Assessment Questions:

Compliance is an important component in the treatment of hepatitis C. This can be challenging due to which of the following?

A Low pill burden
B: Strict dosing schedule
C: Limited side effect profile
D: Ability to take with or without food

Which of the following is an appropriate regimen adjustment based on the following adverse drug events?

A Anemia; dose reduction of peginterferon
B Thrombocytopenia; initiation of darbepoetin alfa
C Thrombocytopenia; dose reduction of protease inhibitor
D Anemia; dose reduction of ribavirin

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-355 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EPIDEMIOLOGY OF HIV ANTIRETROVIRAL RESISTANCE AMONG HIV-POSITIVE, TREATMENT-NAVE MICHIGAN RESIDENTS

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Purpose The objective of this study is to evaluate the presence of antiretroviral transmitted resistance in various subgroups of human immunodeficiency virus (HIV)-positive Michigan residents in order to evaluate options for initial drug therapy selection. The primary focus is on individuals considered "recently infected" as determined by a test known as the BED HIV-1 Capture Enzyme Immunoassay (EIA). The Centers for Disease Control and Prevention (CDC) use the BED HIV-1 capture EIA along with the serologic testing algorithm for recent HIV seroconversion (STARHS) to estimate the number of new HIV infections occurring each year as a method of incidence surveillance.

Methods This study is an IRB-approved retrospective cohort including patients with confirmed HIV diagnosis between 2004 and 2011 and age > 13 years at time of diagnosis as reported anonymously to the Michigar Department of Community Health (MDCH). Subjects are excluded if there is no documentation of genotype or BED assay within the MDCH database, or if they have a history of antiretroviral drug use. The study was approved by the Institutional Review Board of Henry Ford Health System. The primary aim is to compare the distribution of antiretroviral transmitted resistance mutations among those infected recently versus non-recently. This categorization will be based on individual results for the BED HIV-1 capture (EIA) as reported to MDCH at the time of diagnosis. Antiretroviral resistance will be determined according to genotype interpretation via the algorithms of the Stanford HIV drug resistance database. Secondary aims include description of the frequency of antiretroviral resistance in patients infected with non-subtype B HIV-1 and comparison of the distribution of resistance in these individuals versus individuals infected with subtype B virus. Lastly, we aim to identify epidemiological characteristics associated with specific antiretroviral resistance mutations. Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Describe the burden of transmitted drug resistance on treatment success in newly-diagnosed, recently-infected HIV-positive individuals

Explain the use of the BED HIV-1 Capture Enzyme Immunoassay (EIA) in surveillance of new HIV infections

Self Assessment Questions:

The presence of significant drug-resistance mutations in a newly-infected, treatment-nave individual is problematic because:

A It means there are no therapeutic options available for this patient

B: The selective pressure of antiretroviral therapy will lead to treatme

C: It indicates acquisition of drug resistance from the replication error

D: More resistance mutations will occur with treatment since resistan

The BED HIV-1 capture enzyme immunoassay (EIA) estimates the duration of HIV infection based on which of the following:

A HIV viral loads

B CD4 counts

C Anti-HIV IgG/total IgG levels

D Western blot results

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-634 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MAJOR BLEEDING IN PATIENTS RECEIVING DABIGATRAN VERSUS WARFARIN

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Background: Dabigatran and warfarin, anticoagulants used to prevent thromboembolic disease in patients with atrial fibrillation, both carry the risk of major bleeding as an adverse effect. Post marketing concerns over major hemorrhage with dabigatran caused the Food and Drug Administration (FDA) to initiate a review of serious bleeding events using claims data. Although no difference was found in the rate of major hemorrhage in new users, the FDA cautioned that claims data has limitations that only manual chart review could correct. After receiving numerous reports of dabigatran major bleeding within our health system we undertook a systematic study of this issue in patients with non-valvular atrial fibrillation. Purpose: To identify, characterize and compare major bleeding events on dabigatran to those on warfarin therapy. Methods: This study is a retrospective chart review. The pharmacy database will be used to generate a list of patients taking dabigatran or warfarin. This list will be cross referenced with a list of patients with an ICD-9-CM code for both atrial fibrillation and a major bleed (determined through literature search) and a procedure code for transfusion. The warfarin patient list will be further narrowed by INR > 1.8 within 30 days of discharge date. Major bleed on anticoagulant therapy will be verified with manual chart review according to the ISTH definition. If major bleeding is not confirmed the patient will be excluded. Data collection will include: patient demographics, laboratory data, diagnostic imaging, chart documentation of bleed, data for calculation of bleeding risk scores (HAS-BLED, HEMORR2HAGES, and CHADS2), and interacting medications. Risk factors for bleed as well as hemorrhage outcome will be compared. Results: To be presented.

Conclusion: To be presented.

Learning Objectives:

Discuss the recent concern for serious bleeding with dabigatran.

Recognize bleeding risk factors for antithrombotic therapy in atrial fibrillation.

Self Assessment Questions:

What was the result of the recent FDA review of serious bleeding reports on dabigatran?

A Dabigatran causes a higher incidence of serious bleeding than wa

B: Dabigatran causes less but more serious bleeding than warfarin.

C: Warfarin and dabigatran cause an equal amount of serious bleedir

D: Bleeding rates do not appear to be higher on dabigatran versus wa

Which of the following parameters is included to evaluate risk of bleeding in both HAS-BLED and HEMORR2HAGES bleeding risk scores?

A Fall risk

B History of bleeding

C Anemia

D Malignancy

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-356 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACY-RESIDENT RUN DIABETES CLINIC IN A FAMILY PRACTICE OFFICE

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Purpose: Diabetes mellitus is a progressive disease that leads to significant morbidity, mortality, and socio-economic burden. It affects more than 20 million Americans and is the leading cause of heart disease, stroke, kidney failure, new cases of blindness, and nontraumatic lower-limb amputations. Due to the progressive nature of the disease, of utmost importance are early implementations of evidence based diabetes treatment guidelines in addition to counseling on lifestyle interventions. The aim of this study is to evaluate the effectiveness of meeting current guidelines at a pharmacy-resident run diabetes clinic in a family practice office. Methods: Patients were referred by the attending physician and resident-physicians to see the pharmacy-resident for a one-hour diabetes education appointment. Patients were included in the study if they were referred and had a face-to-face appointment with the pharmacy-resident. During the patients visit, they would receive diabetes education on: disease pathophysiology, lifestyle modifications, proper medication administration, and correct glucometer timing/usage. Progress notes were written for each session and could include specific recommendations for resident-physicians and attending to consider. Baseline data was collected for each patient prior to their initial visit with the pharmacist and included: patient demographics, most recent hemoglobin A1c (HbA1c), lipid panel, potassium, serum creatinine, and urine microalbumin. At the time of the visit, the patients blood pressure, number and type of medications prescribed, and numbe of medication recommendations made were recorded. The primary outcome measure was the number of patients who reached their pre-defined HbA1c goal. Secondary outcome measures included: number o patients who reached low-density lipoprotein (LDL), high-density lipoprotein (HDL), and blood pressure goals; number of medication recommendations made and accepted by physicians, and the rate of diabetes-related emergency department visits. Results/Conclusions: Data collection is currently in progress and will be presented at the Grea Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify diabetes education topics to be discussed with patients at their pharmacy-resident appointment

Recognize which evidence-based treatment guidelines to apply given a patients demographic information

Self Assessment Questions:

Which of the following services is not offered at the pharmacy-resident run diabetes clinic:

A Medication adjustment

B: Laboratory monitoring

C: Lifestyle modifications

D: Point-of-care blood glucose testing

DH is a 43 year-old female with newly diagnosed type-II diabetes with nc co-morbidities. Based on this information, please select the most appropriate goal HbA1c for this patient from the list below.

A 7.0%

B < 6.5%

C 7.5%

D 6.0%

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-357 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF AN ONSITE PHARMACIST LED TUBERCULIN SKIN TESTING (TST) SERVICE

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Statement of Purpose: To determine the extent to which compliance rates of students receiving a Tuberculin Skin Test (TST) improve with the utilization of a pharmacist led onsite clinic. Methods: Prior to commencement, this study was submitted to and approved by the Sullivan University College of Pharmacy (SUCOP) Institutional Review Board. This study will examine the compliance rates of TST among students that received screening through the InterNational Center for Advanced Pharmacy Services, a pharmacist led ambulatory care clinic housed in SUCOP. Participants in this study will consist of first, second, and third year pharmacy students who get an annual TST in order to intern at various hospital and community pharmacies. Screening data from the past three years will be collected from the Office of Experiential Education at SUCOP for retrospective analysis and comparison. The Mantoux TST will be utilized which involves injecting 0.1 milliliters of tuberculin into the inner surface of the forearm. Administrators examine the patient for a raised area, or induration, and measure in millimeters the diameter of the indurated area perpendicular to the long axis. All data will be recorded without patient identifiers and maintained confidentially. The percentage of students that went on clinical rotations with an up-to-date TST will be calculated to determine compliance and compared to previous years during which time an onsite clinic was not available. Results: The percentage of students that obtained their required TST prior to starting APPE clinical rotations increased 6.84% after TST in INCAPS was available, but this is not yet significant (P=0.056). TST days are scheduled for early Spring through INCAPS prior to Class of 2014 APPE rotations and Class of 2015 IPPE rotations and more data collection is planned so further analysis can be conducted. Conclusion: Preliminary results of this study indicate a positive impact of establishing a pharmacist led in house tuberculosis skin testing program.

Learning Objectives:

Describe general etiology, pathophysiology, transmission and prevalence of tuberculosis

Recognize the impact of an in-house pharmacist-led tuberculin skin testing program on student compliance

Self Assessment Questions:

Which of the following statements is correct regarding tuberculosis?

A Healthcare workers including pharmacists and student pharmacist

B: Tuberculosis is spread through sharing food or drink and/or kissing

C: Infection with the tuberculosis bacterium will always cause an activ

D: Tuberculosis is highly contagious disease caused by a bacterium c

Which of the following statements is correct regarding the study conducted at the InterNational Center for Advanced Pharmacy Services'

A Preliminary results illustrated a positive outcome of establishing a

B TB blood tests were utilized during the study period for detection o

C Participants in this study consisted of the general public regardless

D SUCOP is sending large numbers of students out on rotations with

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-663 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF MEDICATION ORDER VERIFICATION IN A MULTIHOSPITAL HEALTHCARE SYSTEM

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Purpose: In 2010, Aurora Health Care (AHC) embarked on a three year plan to implement an integrated electronic medical record (EMR) and clinical software system including computerized provider order-entry (CPOE) and a range of clinical and operational applications. Despite reports of efficient order processing and reduced transcription errors with CPOE-integrated EMRs and clinical software systems, surveyed AHC pharmacists reported spending up to 25% of each shift modifying medication orders upon verification. Medication order entry errors, order "build" errors, and site-specific processes were among the most common reasons pharmacists reported modifying orders. The objective of the project is to reduce pharmacist-modified medication orders from baseline. Methods: A retrospective review of medication orders from six AHC hospitals operating on the new clinical software system for at least one month was conducted. Data collection and analysis included order name and identification, ordering user, verifying user, rejected medications with reject reasons, the presence or absence of changes made to modifiable order fields, including order start time/date, order frequency, first dose start time, administration dose, and whether or not a medication was marked as patient supplied. Information gained from data analysis will be used to identify interventions to reduce medications orders modified by pharmacists. Results/Conclusion: A total of 270,249 medication orders were collected at baseline. Data analysis is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall two reasons AHC pharmacists reported modifying medication orders.

Identify three medication order fields modifiable upon verification.

Self Assessment Questions:

What was one of the most commonly reported reasons AHC pharmacists modify medication orders?

A Drug-allergy interactions

B: Order entry errors

C: Patient decline

D: User preference

Which medication order field(s) are modifiable upon verification?

A Start time

B Frequency

C Administration dose

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-664 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF POSACONAZOLE PROPHYLAXIS FOR PREVENTION OF INVASIVE FUNGAL INFECTIONS

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Purpose: Invasive fungal infections represent an important cause of morbidity and mortality in immunocompromised patients. Posaconazole is a broad spectrum triazole antifungal with activity against most Aspergillus species. Unlike other triazole antifungals, posaconazole has improved activity against the zygomycetes. Posaconazole is indicated for prophylaxis in patients with acute leukemia or myelodysplastic syndrome who are neutropenic after induction chemotherapy. Prophylactic posaconazole is also indicated in patients with acute or chronic extensive graft versus host disease after allogeneic hematopoietic stem cell transplantation. An evaluation of posaconazole use at the medical center was needed due to increased use and high associated cost. The study objective was to evaluate the use of prophylactic posaconazole and its effect on the incidence of invasive fungal infections. Methods: A retrospective chart review was performed at Rush University Medical Center to identify all patients receiving posaconazole prophylaxis from July 1, 2010 through June 30, 2012. Exclusion criteria included pregnancy, age less than 18 years, and history of an invasive fungal infection within the past 30 days. The primary outcome was to assess the efficacy of prophylactic posaconazole on the incidence of proven or probable invasive fungal infections in the indicated immunocompromised patient populations. Efficacy was defined as remaining free of invasive fungal infection at 90 days. Proven or probable invasive fungal infections were defined using criteria established by the European Organization for the Research and Treatment of Cancer and the Mycoses Study Group. Secondary outcomes included frequency of escalation to antifungal treatment regimens, adverse events related to posaconazole, reasons for discontinuation, mortality, length of stay, and disposition. Adherence to current institutional posaconazole guidelines for use was also assessed.

Results/Conclusions: Data collection and analysis are in progress and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the antifungal spectrum of activity of posaconazole in relation to other triazole antifungals.

Identify the appropriate indications and dosing regimens for antifungal prophylaxis with posaconazole.

Self Assessment Questions:

Posaconazole exhibits antifungal activity against which of the following?

A Candida

B: Aspergillus

C: Cryptococcus

D: All of the above

Posaconazole is appropriately utilized in which of the following situations?

A Posaconazole 400 mg twice daily after AML induction chemothera

B Posaconazole 200 mg three times daily for prolonged fungal proph

C Posaconazole 200 mg three times daily after AML induction chem

D Posaconazole 200 mg twice daily initiated prior to AML induction v

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-359 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIFUNGAL PROPHYLAXIS ON THE INCIDENCE OF INVASIVE FUNGAL INFECTIONS IN ORTHOTOPIC LIVER TRANSPLANT PATIENTS

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Purpose: Invasive fungal infections are associated with significant mortality in liver transplant patients with an incidence between 4% and 42%. Various antifungals have been studied as prophylaxis against invasive fungal infections in liver transplant patients; however there is currently no consensus on the standard of care due to various factors such as uncertain clinical benefit, unclear duration of treatment, risks of toxicity and adverse events. The objective of this study is to compare the incidence of invasive fungal infections in orthotopic liver transplant patients who did not receive antifungal prophylaxis or received prophylaxis with caspofungin or fluconazole at Rush University Medical Center (RUMC). Methods: This is a retrospective chart review identifying all patients who underwent an orthotopic liver transplant between July 2011 and July 2012 at our institution. Data from a previous retrospective chart review completed at RUMC between June 2007 and October 2008 will be included from a patient database. This study includes all patients that received at least one dose of either fluconazole or caspofungin for prophylaxis and patients that met high-risk criteria who did not receive antifungal prophylaxis. Patients will be excluded if they had an incomplete transplant due to complications or if their medical record is unavailable. The primary outcome of this study is to compare the incidence of fungal infection post-operatively in liver transplant patients treated with fluconazole, caspofungin, or no prophylaxis. The secondary outcome will evaluate the appropriateness o prophylaxis therapy based on the patients risk stratification.

Results/Conclusions: Data collection and analysis are currently in progress.

Learning Objectives:

Explain the criteria utilized at Rush University Medical Center to determine if a patient will receive antifungal prophylaxis post liver transplant.

Discuss the recommendation at Rush University Medical Center for fluconazole as prophylaxis in high-risk liver transplant patients.

Self Assessment Questions:

Based on the literature presented, which of the following would result in a patient meeting high-risk criteria for antifungal prophylaxis at our institution?

A Mechanical ventilation pre-transplant
B: Renal replacement therapy pre-transplant
C: Previously documented fungal infection
D: Prolonged transplantation duration (>11 hours)

Which of the following Candida species does fluconazole NOT cover?

A Candida albicans
B Candida parapsilosis
C Candida krusei
D Candida tropicalis

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-358 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST-MANAGED DIURETIC DOSING SERVICE IN A CONGESTIVE HEART FAILURE PATHWAY AND ITS IMPACT ON 30-DAY HOSPITAL READMISSION RATES

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Background:

Approximately 5.8 million people in the United States have congestive heart failure (CHF). CHF is a progressive chronic disease and a growing burden to the healthcare system, resulting in frequent hospital admissions and high mortality rates. Approximately 20%-50% of CHF patients will be readmitted within a year of their first CHF hospitalization. Diuretic therapy plays a fundamental role in their management. Purpose: The objective of this study is to develop and evaluate an innovative pharmaceutical care program in which pharmacists aggressively dose diuretics to manage congestion for patients admitted with CHF exacerbation. The purpose of this study is to determine whether the length of stay (LOS) and readmission rates will be decreased by our CHF pathway. Methods: This was a single-center, non-randomized retrospective and prospective study. Retrospective chart review of patients admitted between September 2011 and December of 2011 receiving standard care served as the baseline. Prospective chart review of patients admitted between September 2012 and December of 2012 receiving the enhanced pharmaceutical care service served as the pilot. Exclusion criteria included newly diagnosed CHF, HR <40 or >130 bpm, and SBP <85, BNP<100 pg/ml or > baseline BNP, troponin >1, myocardial infarct, dialysis patients, and intubated mechanically vented patients. A protocol was developed between pharmacists and physicians to describe the standard of practice and medication changes (furosemide & bumetanide) allowed to be made by pharmacists. A second set of data was obtained from both retrospective and prospective groups looking at readmissions to the ER or the hospital during 30 days following discharge to determine all-cause re-hospitalization as well as CHF-related re-hospitalization. Clinical outcomes included LOS and 30-day al cause and CHF-related re-hospitalization. Results/Conclusions: Data collection and analysis are ongoing. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define the current management of patients with heart failure who have multiple hospital readmissions.

Describe the role of the pharmacist within the HF multidisciplinary team.

Self Assessment Questions:

The role of pharmacists and other healthcare professionals in managing patients with heart failure includes which of the following:

A Decreasing rates of admissions
B: Decreasing compliance
C: Decreasing costs associated with heart failure admissions
D: A and C

Which of the following is a possible adverse effect of diuretic dose escalation in the setting symptomatic heart failure?

A Worsening renal function
B Pulmonary edema
C Paroxysmal nocturnal dyspnea
D Peripheral edema

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-360 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF GRANULOCYTE COLONY-STIMULATING FACTOR (G-CSF) AND THE INCIDENCE OF REJECTION IN KIDNEY OR PANCREAS TRANSPLANTATION

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Background: Kidney or pancreas transplantation can place patients at high-risk for neutropenia due to the induction agents used at the time of surgery and maintenance medications post-transplant. Resulting neutropenia may increase the risk of infection and may lead to a reduction in immunosuppression. Neutropenia in the oncology setting is most frequently treated with granulocyte colony-stimulating factors (G-CSF) due to their ability to increase progenitor cells and produce neutrophils. However, the use of G-CSF in solid organ transplantation has been less studied and evidence of its effect on the incidence of rejection is mostly based on case reports and small observational studies. The purpose of this study is to evaluate the use of G-CSF (e.g. filgrastim) specifically in kidney and pancreas transplant patients who develop neutropenia and to identify the risk of rejection in patients who receive G-CSF. Methods: Before data collection, this study was approved by the IRB at Northwestern Memorial Hospital. Electronic medical records of 1,718 recipients of kidney or pancreas transplants performed at Northwestern Memorial Hospital between 1/1/2006 - 10/31/2011 who received alemtuzumab induction, valganciclovir prophylaxis, and G-CSF will be retrospectively reviewed. Data will be collected on demographics and clinical characteristics of patients as wel as data on incidence of rejection and absolute neutrophil count (ANC). The primary endpoint is the incidence of biopsy-proven acute rejection ir kidney or pancreas transplant patients within 3 months of receiving G-CSF. The secondary endpoints include severity of rejection, dose and duration of G-CSF, and time to ANC recovery. Analyses of the primary endpoint will be conducted using descriptive statistics; categorical variables will be compared using a Chi-squared analysis, while continuous variables will be compared using the Students t-test. Results: Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss potential reasons for neutropenia in kidney or pancreas transplant patients.

Explain the rationale of utilizing G-CSF in kidney or pancreas transplant patients and its association with acute rejection.

Self Assessment Questions:

Neutropenia after kidney or pancreas transplantation can be induced by which of the following?

A Mycophenolate mofetil

B: G-csf

C: Cytomegalovirus

D: A and C

Which of the following is true regarding G-CSF?

A The most common side effects of G-CSF are bone pain and splen

B ANC recovery can be expected in 1-2 months after using G-CSF.

C The FDA recommended starting dose of filgrastim for chronic neut

D G-CSF should be utilized when ANC > 10,000/mm3.

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-361 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF THE IMPACT OF SWITCHING INSULIN DELIVERY METHODS FROM VIALS TO PENS IN A VETERAN POPULATION

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Purpose: To assess the impact of converting from insulin vials to insulir pens on clinical outcomes, insulin regimen adherence, patient satisfaction, and costs associated with insulin administration. Methods: This IRB approved study involves a retrospective chart review of all patients ≥ 18 years old at the Richard L. Roudebush VAMC who received a prescription for insulin aspart pens over a three year period. Exclusion criteria include receipt of an insulin pen prescription < 90 days prior to study end, receipt of < 180 day supply of insulin pens, use of insulin aspart vials for < 6 months prior to conversion to insulin pens, receipt of an insulin aspart prescription dose solely on correction factor, concomitant use of insulin aspart vials and pens, non-VA diabetes management, and lack of a hemoglobin A1c (HbA1c) level in the 12 months prior to converting to a pen device or 12 months after converting to a pen device. Patient demographics, duration of insulin use, dose and directions for insulin use, concomitant diabetic medications, HbA1c levels, hypoglycemic events, insulin regimen adherence, provider documentation of patient satisfaction with insulin administration method, and cost of insulin delivery methods will be collected. Primary endpoints include 90-day cost of insulin delivery methods and change in average HbA1c pre- and post-conversion. Secondary endpoints include hypoglycemic events, patients achieving average HbA1c < 7% and < 9%, and patient satisfaction with and adherence to each insulin delivery method. Preliminary Results: Twenty-five males and one female patient have been reviewed, with an average age of 60 years. Average HbA1c decreased post-conversion to insulin pens (8.7% vs. 8.5%). There were fewer patients with an average HbA1c < 7% after conversion (1 vs. 2) and more patients with an average HbA1c < 9% after conversion (17 vs. 16). In addition, there were fewer hypoglycemic events post-conversion (6 vs. 8).

Learning Objectives:

Recognize perceived barriers to initiation of insulin therapy in patients with diabetes.

Describe the potential advantages associated with converting insulin delivery methods from vials to pens in terms of clinical, economic, and humanistic outcomes.

Self Assessment Questions:

Which of the following has/have been identified as (a) potential barrier(s to insulin therapy initiation in diabetic patients?

A Apprehension about weight loss

B: Fear of hypoglycemia

C: Fear of injection pain

D: B and C

Of the following outcomes, which has/have been associated with conversion of insulin delivery methods from vials to pens?

A Improved convenience of administration and social acceptability

B Increased hypoglycemia-related events

C Increased insulin regimen adherence

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-362 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMAL TIMING OF ANTI-FACTOR XA LEVEL MONITORING IN PEDIATRIC PATIENTS RECEIVING ENOXAPARIN

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Enoxaparin is used in the treatment of venous thromboembolism and pulmonary embolism in many pediatric patients. The American College of Chest Physicians recommends anti-factor Xa concentration monitoring in pediatric patients receiving enoxaparin. However, the College does not specify after which dose anti-factor Xa levels should be obtained. At the study institution, anti-factor Xa levels were obtained after the first dose and after steady state dose. The objective of this study is to determine if a difference exists in anti-factor Xa levels when collected after the first dose versus a dose at steady state in pediatric patients receiving enoxaparin. A retrospective pilot study in pediatric patients receiving enoxaparin with anti-factor Xa monitoring from January 1, 2008 through August 31, 2012 at University of Michigan C.S. Mott Childrens Hospital was conducted. Patients between 0 and 18 years of age were included if an anti-factor Xa level was collected after the first dose and again after an assumed steady state dose. The following patients will be excluded: anti-factor Xa levels collected outside recommended 4-6 hours post-dose window, exposure to enoxaparin 48 hours prior to treatment initiation, dose adjustment after the first dose, receiving dialysis or pregnant at the time of therapy. In addition to demographic information, other data to be collected include time of dose administration, time of anti-factor Xa level collection, anti-factor Xa level, and serum creatinine. The primary endpoint is the difference between the anti-factor Xa levels after first enoxaparin dose and assumed steady state dose. The primary endpoint will be analyzed using parametric and nonparametric tests as appropriate. Data collection and analysis is ongoing and will be presented at the Great Lakes Residency Conference

Learning Objectives:

Explain the importance of monitoring anti-factor Xa levels in pediatric patients receiving enoxaparin.

Explain how to appropriately collect and interpret and anti-factor Xa levels in a pediatric patient receiving treatment doses of enoxaparin.

Self Assessment Questions:

Why is it important to monitor enoxaparin in pediatric patients?

A The pharmacokinetics of enoxaparin in children is variable

B: There is no need to monitor enoxaparin in children

C: There is uniform mg/kg dosing of enoxaparin among all pediatric p

D: Enoxaparin is administered via a different route in pediatric patient

Which of the following best reflects the appropriate time to obtain an ant factor Xa level in twice daily dosing of enoxaparin?

A One hour before the dose

B Four hours before the dose

C One hour after the dose

D Four hours after the dose

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-363 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HIGH-DOSE VORICONAZOLE THERAPY IN PATIENTS WITH FUNGAL INFECTIONS ASSOCIATED WITH CONTAMINATED METHYLPREDNISOLONE INJECTIONS

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Background: St. Joseph Mercy Hospital Ann Arbor (SJMH) was at the forefront of the management of fungal infections associated with contaminated methylprednisolone injections. The fungus primarily responsible was Exserohilum rostratum, a mold that rarely causes disease in humans. The Center for Disease Control and Prevention (CDC) recommended treatment with voriconazole and amphotericin B based on a small case series and individual case reports. Purpose: The standard voriconazole regimen for invasive fungal disease is 6 mg/kg every 12 hours for two doses, followed by a maintenance dose of 4 mg/kg every 12 hours. To ensure adequate penetration into the central nervous system (CNS), the CDC recommended initiating therapy with a high dose voriconazole regimen of 6 mg/kg every 12 hours for patients with CNS involvement. Therapeutic drug monitoring was performed, and voriconazole therapy was adjusted to maintain a serum trough level of 2-5 mcg/ml. The primary objective of the study was to describe the trough levels obtained with this high dose therapy, with the hypothesis anticipating a significant number of patients would need dose decreases due to elevated levels and/or toxicity. We also describe common adverse events from high dose voriconazole therapy.

Method: This is a retrospective, single-centered, descriptive study evaluating the treatment of patients with fungal infections associated with contaminated methylprednisolone injection from October 4th, 2012 through January 4th 2013. Patients included in the study received at least 7 days of voriconazole therapy. Results/ Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify appropriate therapeutic concentration range and timing of serum voriconazole levels

Identify potential adverse effects of voriconazole therapy

Self Assessment Questions:

Which of the following was the most commonly observed side effect of voriconazole therapy?

A rash

B: increased liver function tests (LFTs)

C: hallucinations/ visual disturbance

D: QTc prolongation

Which of the following is a common over-the-counter medication that may increase voriconazole serum trough levels?

A acetaminophen

B omeprazole

C psuedoephedrine

D ranitidine

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-364 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MENTAL HEALTH RESOURCE UTILIZATION IN PATIENTS WITH POST TRAUMATIC STRESS DISORDER: DO BENZODIAZEPINES PLAY A ROLE?

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Purpose: Due to an increase in prevalence of post traumatic stress disorder (PTSD), the Veterans Health Administration released guidelines for treatment, the second edition printed in early 2011. Benzodiazepines are discouraged for inclusion in treatment regimens due to risk versus benefit, though this is only a level D recommendation (expert opinion). The purpose of this research is to determine if there is an increase in mental health resource utilization (emergency room or mental health clinic visits and inpatient psychiatry admissions) in patients with PTSD that utilize benzodiazepines compared to those that have no history of use due to these risks. Methods: This study will be a retrospective cohort study. Data will be collected from the computerized patient record system at a Veterans Affairs Medical Center from July 2011 to June 2012. Patients will be included if they are 18 years or older and have a diagnosis of PTSD identified by ICD-9 codes at any time during the study period. Primary outcomes include number of emergency room visits, mental health clinic visits, inpatient psychiatry admissions, and substance abuse treatment program enrollments. Patients will be stratified into three groups: patients who have a PTSD diagnosis with no history of benzodiazepine use; patients who have a PTSD diagnosis with a history of benzodiazepine use who discontinued the medication in the 6 months prior to the study period or during the study period; and patients who have a PTSD diagnosis and continued benzodiazepine use throughout the study period. Percentage of patients utilizing each of the resources and the frequency of usage will be calculated. Data will be analyzed by ANOVA due to its multi-group continuous nature. This study has been approved by the Medical Centers investigational review board. Results/Conclusions: To be presented at Great Lakes Residency Conference

Learning Objectives:

Explain why benzodiazepines are generally not recommended for the treatment of the core symptoms of PTSD.

Describe the potential impact of benzodiazepines on mental health resource utilization in patients that have PTSD.

Self Assessment Questions:

Benzodiazepines are generally prescribed by clinicians for patients with PTSD because:

A They have strong evidence demonstrating effective treatment of c
B: They bring about rapid, short-term symptomatic relief.
C: They have very few risks associated with use.
D: They have no effect on extinction of conditioned fear.

Although the VA/DoD guidelines released first in 2004 and again in 2011 recommend against use, the frequency of benzodiazepine use among veterans with PTSD is still approximately:

A 15%
B 30%
C 50%
D 70%

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-365 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COLLABORATIVE PRACTICE AGREEMENT IN ESTABLISHING A PHARMACIST-PRESCRIBED SEXUALLY TRANSMITTED DISEASE TREATMENT PROTOCOL IN THE EMERGENCY DEPARTMENT

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Purpose Wheaton Franciscan - St. Joseph Campus operates an emergency department (ED) comprised of 25 treatment rooms and maintains the highest volume of annual ED visits in the state of Wisconsin (nearly 80,000 patient visits per year). Prior to the addition of two ED pharmacists, nurses reviewed and documented pertinent information for chlamydia and gonorrhea cases. Typically, it is a physician assistant who carries the responsibility to prescribe appropriate STD medication therapy based on positive culture samples. ED providers support the idea of developing a pharmacist-prescribed STD treatment protocol and are willing to delegate this task solely to ED pharmacists. The development of this collaborative practice agreement (CPA) allows ED pharmacists to practice under an approved protocol to enable pharmacist-prescribed treatment(s) for STDs exclusively for chlamydia and gonorrhea. In order to expedite the current STD treatment prescribing process by decreasing workflow interruption for ED providers, the ED pharmacist plans to implement the CPA to enhance patient care. Methods Exemption of Institutional Review Board approval was granted. Baseline measurements (time invested to review cultures) were collected by two designated nurses in order to reach a goal of 50 total cultures. The creation of a CPA for a pharmacist-prescribed STD treatment protocol was developed and presented to the ED Medical Director for approval. In utilizing the approved CPA, ED pharmacists will compile and record the amount of time dedicated to each culture with the assistance of the STD treatment protocol. The amount of time spent prior to the initiation of the CPA will be compared to the time spent after the establishment of the CPA being utilized. To gain feedback from ED providers, a satisfaction survey will be conducted. Results/Conclusions Results and conclusions of this project are underway and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the benefits of establishing a collaborative practice agreement for a pharmacist-prescribed STD treatment protocol in the ED

Identify the significant contributions and general value in which ED pharmacists enhance patient care by providing appropriate STD treatment(s) based on the most current CDC guidelines

Self Assessment Questions:

Which of the following are benefits of establishing a collaborative practice agreement for a pharmacist-prescribed STD treatment protocol?

A By adhering to the most current CDC guidelines, the ED pharmaci
B: The ED pharmacist has the authority to diagnose both chlamydia a
C: The ED pharmacist may improve patient care by prescribing the m
D: Both A and C

In patients with a reported penicillin allergy, which of the following would be the best option for treating solely gonorrhea?

A Azithromycin 1gm PO x 1 dose
B Azithromycin 1gm PO x 1 dose + Test-of-Cure in 1 week
C Azithromycin 2gm PO x 1 dose
D Azithromycin 2gm PO x 1 dose + Test-of-Cure in 1 week

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-366 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF PHARMACIST INTERVENTIONS AND RE-HOSPITALIZATIONS FOR PATIENTS IN AN AMBULATORY CARE MULTIDISCIPLINARY CHF CLINIC

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Purpose: Despite the current development of guidelines for the management of heart failure, it remains the most frequent cause of hospitalization in patients >65 years of age with a re-hospitalization rate as high as 50% within six months of discharge1,2. In the management of heart failure it is recommended to titrate certain medications to a recommended target dose to decrease cardiac remodeling and re-hospitalizations. However, titration of heart failure medications is often difficult and limited by medication side effects. Recently at HVAMC a pharmacist has been incorporated into the ambulatory care heart failure clinic to reconcile heart failure medications and make recommendations on dose adjustments, as well as, identifying medications that could potentially exacerbate heart failure. The purpose of this research is to determine the percentage of accepted pharmacist recommendations in various categories and the effect of acceptance of these recommendations on the rates of hospitalizations and/or emergency room visits. In addition, the amount of health-system dollars avoided due to reduction in hospitalizations and/or emergency room visits will also be examined.□□Methods: A retrospective chart review was performed on pharmacist progress notes from all initial patient visits to HVAMCs ambulatory care CHF clinic from April 1st 2011 to June 30th 2012. Progress notes were assessed for number of recommendations made and percentage of accepted pharmacist recommendations in several categories. Ninety day hospitalization and/or emergency room visits were assessed from the time of initial patient visit with a pharmacist, and compared to the number of accepted pharmacist recommendations. Furthermore, reduction in hospitalizations and/or emergency room visits within 90 days of initial CHF appointment and health-system dollars avoided were compared with number of pharmacist interventions to determine any type of relationship.□□Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the current guidelines on the management of heart failure concerning the recommended target doses of various antihypertensive medications.

Discuss the mechanisms of various agents that can potentially exacerbate heart failure.

Self Assessment Questions:

Which of the follow is the correct target dose for carvedilol in patients weighing <85kg?

A 25mg BID

B: 12.5mg BID

C: 6.25mg BID

D: 3.125mg BID

Which of the follow drugs could exacerbate heart failure?

A Lisinopril

B Amlodipine

C Diltiazem

D Acetaminophen

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-367 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF STANDARDIZED MEDICATION EDUCATION IN PATIENTS WITH CARDIOVASCULAR DISEASE

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Purpose:□Patients with cardiovascular disease CVD are required to take multiple medications to prevent further cardiovascular injury, death, and to improve quality of life. In order to prevent adverse outcomes and hospital readmission, it is imperative that patients fully understand and adhere to recommended treatment regimens. Current literature suggests that inpatient medication education to cardiovascular patients reduces hospital readmission rates and may potentially reduce long term mortality. However, it is well documented that many patients either do not fully understand the information they are given or feel the information provided is inadequate. The objective of this study is to determine the benefit of standardized discharge medication education on newly prescribed cardiovascular medications in patients located on the Advanced Heart Care Unit at Methodist hospital.□□Methods:□This prospective study will be conducted on patients admitted to the advanced heart care unit from October 2012 to March 2013. To determine the impact of the standardized patient education materials, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey will be utilized. Survey scores following implementation of the standardized education materials will be evaluated during the months of January 2013 through March 2013. These scores will be compared to survey results rendered from the months of October November, and December 2012. During this period patient education was not standardized and was inconsistently facilitated through the use of printed material from medical information websites. In addition to patient satisfaction scores, readmission rates from of both groups will be assessed. □□Results and Conclusions:□Pending at the time of abstract submission.

Learning Objectives:

Discuss the benefits of medication education in the cardiovascular patient population.

Recognize the components of the HCAHPS survey related to patient medication education.

Self Assessment Questions:

Inpatient medication education prior to discharge has been shown to:

A Prevent hospital readmission

B: Reduce mortality rates

C: Increase treatment cost

D: Prevent emergency department visits

Which of the following are asked in the HCAHPS survey?

A Before giving you any new medicine, how often did hospital staff te

B Before giving you any new medicine, how often did hospital staff d

C When I left the hospital, I clearly understood the cost of each of m

D When you were in the hospital, how often did a pharmacist tell you

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-368 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE VALUE OF CENTRALIZED STERILE PRODUCT PREPARATION

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PURPOSE: This project is designed to study the feasibility of centralizec sterile product preparation and distribution within the Aurora Health Care System. METHODS: A series of assessments will be completed to determine if centralizing sterile product preparation is both financially and operationally beneficial for the organization. First, the State and Federal regulations surrounding sterile product preparation and distribution within a health care system will be researched. Second, an analysis of products to prepare and the return on investment analysis wi be evaluated. Finally, the operations will be evaluated including staffing requirements and workflow process for purchasing, preparing, storing and distributing sterile products for the health care system. RESULTS: Final results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe three advantages for centralizing sterile product preparation in a health care system

Identify two pros and two cons when using robotic preparation for sterile compounding

Self Assessment Questions:

Which of the following is considered an advantage if preparing sterile products internally rather than purchasing pre-mix from wholesaler or directly from manufacturer?

A Purchasing from a 3rd party takes too much time and resources fr
B: Preparing sterile products internally lowers the cost of the drug
C: Products are safer for our patients if made internally
D: Products are more efficacious if made internally

What is an advantage of using robotic technology for sterile product preparation?

A Robots are less expensive than technicians
B Robots can run 24 hours a day, 365 days a year without a break
C Robots incorporate several check points including barcode scanni
D Robots work faster than technicians

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-665 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND OPTIMIZATION OF AUTOMATED MEDICATION ALERTS IN A COMPUTERIZED PROVIDER ORDER ENTRY SYSTEM

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Purpose: Computerized provider order entry utilizes clinical decision support components to alert clinicians of potential drug safety issues. Medication alerts for drug-drug interactions, patient allergies, dose ranges, duplicate medications and duplicate therapies, are derived from third-party knowledge databases. These alerts can often be overly inclusive. Bypassing critical alerts due to an excess volume of alerts is known as alert fatigue. In September 2012, Froedtert Health providers were presented approximately 15,000 medication alerts per day. The purpose of this analysis is to reduce the volume of medication alerts anc maximize patient safety.□□Methods: This retrospective analysis of medication alerts will assess reports generated by the electronic health record. The group analyzed the frequency of alert type, provider action on alerts and visible alerts per order. Individual alerts that were most frequently overridden were then assessed for optimization. The assessment completed by the study group, composed of pharmacists and informaticists, was based on ISMP recommendations and medication safety requests. Recommendations for optimizations were then presented to multiple governing committees within the health system for approval. Adjustments were made to nine priority alerts for the first intervention. Post-optimization reports were then compared to pre-optimization reports to determine the effectiveness of the intervention. The experiences gained from this process will be used to develop a workflow for ongoing alert management.□□Results/Conclusions: Initial results were collected as week long intervals between 9/2/2012 and 12/15/2012. Data collected after the first optimization was from 1/2/2013 to 1/9/2013. Pre-optimization results included an alert override rate of 78% with an average of 0.78 visible alerts per order. Post-optimization-1 results included an alert override rate of 78% with 0.68 visible alerts per order and an approximate 13% decrease in total alert volume. Results and conclusions from further interventions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify strategies for safely reducing the volume of medication alerts

Discuss data collected prior to and after several medication alert optimizations

Self Assessment Questions:

Alerts were optimized by:

A Adjusting alert severity
B: Replacing alerts with "best practice alerts"
C: Adjusting allowance settings within order sets and panels
D: All of the above

The value of an alert was defined as:

A The number of times an alert was overridden
B Percentage of time an alert was classified as "removed" or "filtered
C Percentage of time an alert was classified as "filtered"
D Number of providers that acted on the alert

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-666 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILITY OF GRAM STAIN TO IDENTIFY THE PATHOGEN IN METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) PNEUMONIA

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) is an increasingly common cause of pneumonia. As a consequence, use of anti-MRSA therapy as an empiric therapy has been increased. Early de-escalation of empiric therapy can be considered for pneumonia, if the gram stain results of respiratory cultures are reliable to predict the presence of MRSA as a causative pathogen. Previous studies have shown mixed results about reliability of gram stain in predicting Staphylococcus aureus growth. Also, sensitivity of gram stain may differ between techniques used to collect respiratory samples for cultures. The purpose of this study is to determine the utility of gram stain results in predicting growth of MRSA in patients with MRSA pneumonia.

Methods: This is a retrospective, observational, descriptive study. Patients were identified by positive MRSA respiratory cultures and included if they demonstrated signs and symptoms of pneumonia. Approximately 100 patients from 4 healthcare facilities who were admitted within 6-month time period were included. The primary endpoint is sensitivity of gram stain for identifying MRSA growth. Secondary endpoints include the time for growth of MRSA in respiratory cultures and sensitivity of gram stain to predict MRSA by type of respiratory sample. Results: To be reported Conclusion: To be reported

Learning Objectives:

Discuss the utility of gram stain in predicting growth of MRSA in a respiratory culture

Explain the benefits of early identification of MRSA growth in respiratory cultures

Self Assessment Questions:

1.Please select the appropriate gram stain appearance of Staphylococcus aureus organism.

A Gram positive bacilli

B: Gram positive cocci

C: Gram negative cocci

D: Gram negative bacilli

What are some of the benefits of early identification of MRSA growth in respiratory cultures?

A Early de-escalation of empiric therapy

B Increased risk of antimicrobial resistance

C Decreased length of stay

D A & c

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-369 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND EVALUATION OF A PHARMACIST-RUN SMOKING CESSATION PROGRAM FOR HOSPITAL ASSOCIATES AND THEIR FAMILY MEMBERS

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Purpose: Assess the effect of a pharmacist-run smoking cessation program on the reduction of tobacco use among hospital employees and their family members. Methods: This is an observational, single-center, nonrandomized study evaluating participant outcomes from a pharmacist-run smoking cessation program for hospital associates and their family members from November 2012 through April 2013. This study involves a collaborative practice agreement with a physician from Employee Health which allows the pharmacist to order nicotine replacement therapy (NRT), bupropion, or varenicline, and is provided to the participant at no charge. UC Health associates and their family members, who are at least 18 years old, are identified via self-referral. Participants have the ability to enroll in a six-week group or individual program The primary outcome will be a change in self-reported nicotine dependence, considered clinically significant at a 50% decrease from week 1, or maintenance of being smoke-free throughout the program. Secondary outcomes include blood pressure, heart rate, and employee satisfaction. Results: Preliminary results show 17 UC Health associates and their family members have enrolled in "UC Health Quits Tobacco". Of these 17 enrollees, 11 have completed the six-week group program, 4 are currently enrolled, 1 participant is currently enrolled in the individual program, and 1 participant did not complete the group program. A clinically significant reduction in tobacco use was seen in 100% of the 10 participants who completed the group program (1 participant was smoke-free throughout). The average percent reduction among the 10 participants was 88% from week 1 to week 6. Among these 10 participants, 40% (N=4) used varenicline, 30% (N=3) used buproprion alone, 20% (N=2) used NRT, and 10% (N=1) used a combination of products. Data will be collected as the "UC Health Quits Tobacco" program continues throughout the year with additional data forthcoming.

Learning Objectives:

Describe current smoking cessation therapy and how to choose the most appropriate medication option for your patients.

Review the impact of a pharmacist-run smoking cessation program on the reduction of nicotine dependence

Self Assessment Questions:

According to The Public Health Service-sponsored Clinical Practice Guideline "Treating Tobacco Use and Dependence: 2008 Update", which of the following will result in a lower rate of absenteeism of em

A Routine testing of cotinine via cheek swab or urine

B: Providing coverage for both smoking cessation medications as we

C: Initiate a health insurance surcharge for employees and their famil

D: Make your workplace “smoke-free”

What has been proven to be the most effective when it comes to helping patients quit smoking?

A Cold Turkey

B Chantix (varenicline) with at least 80% adherance

C Nicotine Replacement Therapy (gum, lozenge, patches, etc.)

D Combination of medication and counseling

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-370 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF HEALTH OUTCOMES FROM A VA INITIATED PROTON PUMP INHIBITOR CONVERSION

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Proton pump inhibitors (PPIs) are one of the most widely prescribed drug classes. Within the Veterans Health Administration (VHA), a small percentage of patients using non-formulary PPIs contribute to more than half of PPI expenditures. Many studies have evaluated this class in regards to clinical efficacy, safety, and cost. Using this evidence-based approach, a VA Medical Center initiated a conversion to a formulary drug, omeprazole or pantoprazole. This research aims to analyze health outcomes, retention rates on those converted, and cost comparisons between healthcare utilization and formulary savings in those changed to mandated agents. For this cohort study, the computerized patient record system (CPRS) will be used to review 270 patients from a VA Medical Center who were converted to formulary PPIs in June 2012. Study entry date is six months prior to the formulary conversion date. A three month washout period following the conversion date will allow time for patients to begin therapy with formulary PPIs. Patients will be followed up to six months after the washout period. The primary outcome will be retention rate of patients remaining on converted PPI at study conclusion. Secondary outcomes will be measured before and after formulary conversion and include: GI consultations related to gastroesophageal reflux disease (GERD) treatment and PPI use; supplemental therapy with histamine-2 receptor antagonists or antacids; change to non-formulary PPI therapy through VA consult or non-VA pathway; and patient dissatisfaction as documented in progress notes. Switchback study analysis will be used to determine retention rate of those switched to formulary PPIs. Multi-variable regression will then be utilized to analyze factors contributing to the resulting retention rate. Secondary outcome significance will be determined by calculating relative risks and hazard ratios.

Learning Objectives:

Identify differences in health outcomes after successful conversion in proton pump inhibitor therapy.

Discuss overall savings based on healthcare utilization and cost reduction after formulary conversion.

Self Assessment Questions:

Which of the following statements is true:

A Studies demonstrate differences in efficacy but no overally differer

B: Existing studies demonstrate no overall differences in safety or eff

C: Current studies suggest omeprazole and pantoprazole treatment p

D: Studies demonstrate differences in efficacy among proton pump in

Which of the following would be appropriate before considering a change in proton pump inhibitor therapy?

A Monitoring effective use of the proton pump inhibitor by ensuring th

B Consider a trial of a different proton pump inhibitor prior to maximiz

C Add intermittent histamine-2 receptor antagonist therapy prior to in

D Maximize the dose, frequency, and duration of use with the curren

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-371 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF GROCERY STORE CHAIN PHARMACISTS CONFIDENCE AND KNOWLEDGE IN PROVIDING TRAVEL MEDICINE SERVICES

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Background: Pharmacists are in an ideal position to provide comprehensive travel information and pre-travel care to members of their communities. The Chicagoland area is home to a large immigrant population and many who travel for business or pleasure. They are in need of pre-travel health consultations. Pharmacists are immunization trained and can offer recommendations specific to each patient and traveled area. Purpose: To assess pharmacist confidence in their knowledge and ability to provide travel medicine education and travel vaccinations. Secondary objectives will determine the factors pharmacists perceive as barriers to performing these services and the impact of travel medicine education on pharmacist knowledge.

Methods: This is a prospective survey based study conducted in a grocery store chain pharmacy. All company pharmacists (n=182) were requested to attend an educational program on travel medicine services The educational session provided APhA immunization trained pharmacists with information on common travel related diseases, vaccine and non-vaccine preventable and preventative measures specific to travel. It focused on refining basic pre-travel health consultation skills and imparting confidence in counseling strategies. Participants were given the option of participating in the research and completing a pre and post education survey. The anonymous surveys focused on pharmacists' confidence in providing the service, their knowledge of travel medicine, and their view on its role in their daily practice. As a supplement to this session, a quick reference tool was provided to each pharmacist. An online post-survey is being administered 4 weeks after the educational session to assess any changes in practice in holding travel sessions, and confidence in providing pre-travel health counseling. A nonparametric paired test will be used to analyze and evaluate the pharmacists' responses.

Results: Data from pre and post surveys will be analyzed using SPSS software. Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review common travel related diseases, vaccine and non-vaccine preventable, as well as prevention of such diseases

Identify a need for Pharmacist Provided Travel Health Services in the Chicagoland area

Self Assessment Questions:

Which of the following is the most common travel related health problem?

A Venous Thromboembolism

B: Hepatitis A

C: Malaria

D: Traveler's Diarrhea

Why would the residents of the Chicagoland area benefit from community based pre-travel health consultations?

A Chicagoland residents are less likely to seek pre-travel health cons

B Chicagoland is home to immigrant populations traveling to and fro

C Chicagoland residents are more susceptible to travel related disea

D Chicagoland residents are more likely to travel to endemic areas th

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-667 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE SAFETY AND EFFICACY OF A HEPARIN PROTOCOL FOR THE TREATMENT OF VENOUS THROMBOEMBOLISM IN THE MORBIDLY OBESE

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Purpose: Studies show that when following current heparin dosing guidelines for the treatment of venous thromboembolisms (VTEs), supratherapeutic activated partial prothrombin time (aPTT) levels have been observed in the morbidly obese. Additional literature demonstrates that lower heparin infusion dosing in morbidly obese patients still allows patients to reach therapeutic aPTT levels, while decreasing potential adverse events associated with higher dosing of heparin infusions. Based on these findings, our institution updated the heparin protocol for the treatment of VTE by decreasing the initial infusion rate from 18 units/kg/hr to 14 units/kg/hr in patients with a body mass index (BMI) ≥ 40. The purpose of this research is to evaluate the safety and efficacy associated with a VTE heparin protocol adjusted for morbid obesity.

Methods: This is an Institutional Review Board approved, single-center, retrospective cohort study from July 2012 to March 2013. Inclusion criteria include: age greater than 17 years, heparin ordered using the heparin protocol for BMI greater than or equal to 40, and greater than or equal to 2 aPTT levels drawn per protocol. Subjects that are pregnant o have the heparin infusion held for indications other than per protocol will be excluded. Subject data will be collected from the start of the heparin infusion until 48 hours post-initiation. The primary endpoint of the study is time to a therapeutic aPTT. The secondary endpoints include: percentage of aPTTs therapeutic within 24 hours, heparin infusion rate required to produce first therapeutic aPTT, and adverse drug events.

Results/Conclusions: Preliminary data of 10 patients show that 70% of patients reached a therapeutic aPTT level within 24 hours of heparin infusion initiation. Further data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recall current American College of Chest Physicians (ACCP) heparin dosing recommendations for the treatment of VTE.

Explain the physiological reasoning behind the indication for decreased initial infusion rates of heparin in patients with a BMI ≥ 40.

Self Assessment Questions:

Which of the following statements is an American College of Chest Physicians (ACCP) recommendation for initial VTE treatment?

A Heparin 40 units/kg bolus followed by an initial infusion rate of 20 u
B: Heparin 80 units/kg bolus followed by an initial infusion rate of 18 u
C: Both a and b
D: Neither a or b

Why might decreased initial heparin infusion rates be required in patients with a BMI ≥ 40?

A Patients with higher BMIs have lower volume of distributions which
B Heparin metabolism increases as adipose tissue increases
C A nonlinear relationship between increased body weight and hepar
D Decreased initial heparin infusion rates are not required in patients

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-372 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF INTRAVENOUS AND ORAL ACETAMINOPHEN IN THE SURGICAL HIP FRACTURE POPULATION

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PURPOSE: Acetaminophen is often used as an adjunct agent to narcotics for post-operative pain to optimize the multimodal pain relief strategy. Intravenous acetaminophen has been shown to be more effective than placebo in decreasing narcotic consumption. However, it is uncertain whether intravenous acetaminophen is more beneficial than oral. The purpose of this study is to evaluate the efficacy of scheduled intravenous acetaminophen versus scheduled oral acetaminophen in decreasing narcotic requirements in the post-surgical hip fracture patien population. METHODS: Adult patients admitted after June 1, 2012 with a diagnosis of a hip fracture who received scheduled acetaminophen were identified retrospectively. Patients were stratified into those receiving scheduled intravenous acetaminophen versus those receiving scheduled oral acetaminophen post-operatively. The primary objective was to determine if the use of scheduled intravenous acetaminophen decreases narcotic requirements compared to scheduled oral acetaminophen. Secondary objectives included the incidence of narcotic related adverse drug events and hospital length of stay. RESULTS: To date, 6 patients in the intravenous acetaminophen group and 10 patients in the oral group were reviewed. Demographic characteristics across patient groups were similar. No significant difference in post-surgical narcotic requirements was found between intravenous and oral acetaminophen in the first 24 hours post-operative (6.83mg vs. 9.50mg oral morphine equivalent dose, p=0.278). There was no significant difference in the incidence of narcotic related adverse drug reactions (0 vs. 1, p=1) or length of hospital stay (138.2 hours vs. 112.2 hours, p=0.422) between the intravenous and oral acetaminophen groups. CONCLUSIONS: Hip fracture patients treated with intravenous acetaminophen or oral acetaminophen had similar use of narcotics for pain control post-operatively. No reduction in narcotic related adverse drug events or hospital length of stay was found.

Learning Objectives:

List the adverse effects associated with narcotics.

Explain possible benefits of using acetaminophen as an adjuvant agent for post-operative pain.

Self Assessment Questions:

All of the following are adverse effects associated with the use of narcotics except:

A Constipation
B: Respiratory depression
C: Nausea and vomiting
D: Hypertension

Possible benefits associated with the use of acetaminophen for post-operative pain include all of the following except:

A Decreased narcotic requirements
B Increased narcotic adverse events
C Decreased hospital length of stay
D Improved pain control

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-373 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A COMFORT CARE ORDER SET IN THE MEDICAL INTENSIVE CARE UNIT AT AN ACADEMIC MEDICAL CENTER

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Purpose: Approximately 20% of all deaths in the United States now occur after admission to an intensive care unit (ICU). The Society of Critical Care Medicine published guidelines for end-of-life care that recommend ensuring the comfort of the patient by placing priority on symptom management. Improvement in the availability of medications and use of interventions to care for dying patients has been shown with the implementation of an order set. The University of Chicago Medical Center implemented a collaborative, multidisciplinary comfort care order set for critically ill patients in September 2011. The purpose of this study is to determine if the order set improved comfort parameters in critically ill patients at the end of life, as well as to determine if utilization of the order set improved variations in medication use and administration.

Methods: A single-center, retrospective, cohort analysis will be conducted of all patients who expired in the medical ICU between September 1, 2010 and August 31, 2011 in the conventional group and all patients who expired between September 1, 2011 and August 31, 2012 in the intervention group. Patients less than 18 years of age will be excluded. Patient age, gender, comorbid conditions, Richmond Agitation Sedation Scale (RASS) or pain score, use of mechanical ventilation, therapies administered in the last 48 hours of intensive care, lab orders, and date and time of death will be collected. The primary endpoint is to assess pre- and post-implementation medication or therapies administered for comfort during withdrawal of care. Secondary endpoints consist of 24-hour opioid dose (in morphine equivalents), the difference in median RASS in intubated patients or mean pain score in non-intubated patients, number and type of therapies ordered, and DNR/DNI code status.Results and Conclusion: Data collection and analysis are currently under investigation.

Learning Objectives:

Describe the use of intensive care at the end of life

Discuss symptoms experienced at the end of life that should be a priority in managing patient comfort

Self Assessment Questions:

What percentage of all deaths in the United States occur in an ICU?

A 10%
B: 15%
C: 20%
D: 40%

Which of the following symptoms require appropriate management at the end of life?

A Dyspnea
B Anxiety
C Pain
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-374 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND IMPROVEMENT OF ALLERGY DOCUMENTATIOI ACROSS THE HEALTHCARE CONTINUUM

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Purpose:The Institute for Safe Medication Practices now recommends that complete allergy information (both allergen and reaction) is collected and readily available to all practitioners when prescribing, dispensing, and administering medications. Proper allergy documentation is important to ensure the safe and effective use of medications, but literature shows accurate and complete documentation remains a problem. Improper documentation can lead to withholding appropriate medications and prescribing less effective, more toxic, or more costly medications. In an effort to improve the current state of allergy documentation at Froedtert Hospital, a retrospective analysis of allergy documentation will be completed.Methods:Froedtert Hospitals electronic medical record (EMR) will be accessed for all patients seen from August 1, 2011 through July 31, 2012. All allergies entered into the system during this time period will be evaluated. Data collected includes the agent, reaction, type of reaction (side effect, systemic, not verified, intolerance, or topical), severity, comments, and documenting medical professional. After analysis of the data, interventions will be determined to optimize allergy documentation. Results:Over the course of one year, 55,836 allergies were entered into Froedtert Hospitals EMR. Twenty-five percent of entries only contained the agent listed. Reactions were listed for 52% of the entries. Severity, type of reaction, and comments were listed for 11%, 24% and 33% of entries respectively. The top three reactions listed were rash, hives, and nausea/vomiting. The top five medication allergies were penicillin, sulfa, codeine, amoxicillin, and morphine. Conclusions:Based on the results, allergy documentation appears to be lacking and is incomplete in 48% o allergies documented. Optimization of allergy documentation within the EMR and an educational plan for all disciplines will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current state of allergy documentation at a 500 bed academic medical center and associated clinics

Discuss the importance of proper medication allergy documentation

Self Assessment Questions:

What percent of allergies documented included a reaction?

A 32%
B: 44%
C: 52%
D: 70%

What information should be documented based on the recommendation from the Institute for Safe Medication Practices?

A Allergen
B Allergen + Reaction
C Allergen + Reaction + Severity
D Allergen + Severity

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-800 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF AN EDUCATIONAL PROGRAM ON PHARMACIST BEHAVIORS, CONFIDENCE AND KNOWLEDGE OF PROBIOTIC RECOMMENDATIONS IN A GROCERY STORE CHAIN PHARMACY

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Background: In recent years, the dramatic growth of probiotic marketing and consumer interest has surpassed scientific research on the safety and efficacy for certain indications. This imbalance has resulted in a need for pharmacists to gain knowledge of the available clinical evidence for probiotics and to assist with product selection and recommendations.□□Purpose: The primary aim of this study is to assess the impact of an educational program on pharmacist behaviors, confidence, and knowledge of probiotic recommendations. Secondary objectives include determining the factors pharmacists perceive as barriers to making probiotic recommendations and evaluating whether measured outcomes vary by pharmacist demographic characteristics. □ □

Methods: All pharmacists employed within a grocery store chain pharmacy (n=182) were invited to attend a live education session on probiotics. Those who attended were given an optional, anonymous pre survey to complete prior to the session. The pre-survey was designed to assess baseline behaviors, confidence, and knowledge of probiotic recommendations. The education session focused on the roles of normal gut flora in health maintenance, defining the term "probiotic", describing how probiotics can be used in therapy, and learning how to assist patients in selecting an appropriate probiotic product. □ □After the live education session, subjects received a written educational supplement to utilize at their respective pharmacies. The supplement serves as a practical reference tool to reinforce knowledge gained at the live session. One month after the session, participating subjects received an electronic post-survey. The post-survey evaluates whether there was a difference in pharmacist knowledge and whether the program had an impact on their confidence and behaviors related to probiotic recommendations. Additionally, it allows subjects to state their satisfaction with the program and provides feedback for future improvements. □□Results: Pre- and post- survey data will be analyzed using SPSS. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Define the term "probiotics" and their basic physiologic role in maintaining health

Identify potential barriers to safe and effective probiotic use in the community pharmacy setting

Self Assessment Questions:

Which of the following statement best defines probiotics and their role?

A Probiotics are contained in many food sources including milk.

B: Probiotics are metabolic byproducts that influence host physiology

C: Probiotics are microorganisms that contribute toward intestinal mic

D: Probiotics are non-digestible food products that promote growth of

Which of the following best describes the current state of probiotic use?

A Probiotic marketing and use has far surpassed scientific research

B Probiotic manufacturing and storage conditions are highly regulate

C Education and information on appropriate probiotic supplement se

D Both a and c are correct

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-668 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EPIDEMIOLOGY AND RISK FACTORS ASSOCIATED WITH CEFEPIME-NON-SUSCEPTIBLE ENTEROBACTERIACEAE AND PSEUDOMONAS AERUGINOSA

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Purpose: □To identify risk factors associated with cefepime-non-susceptible Enterobacteriaceae and Pseudomonas aeruginosa. Based on these risk factors hypothesize strategies for empiric therapy.□□Methods: □This IRB-approved study will be conducted using a retrospective case-case-control design. A retrospective records review will be conducted using the Henry Ford Hospital electronic medical records database. Data from patients with cefepime-non-susceptible isolates will be compared to patients with cefepime-susceptible and culture-negative isolates. Cefepime-non-susceptible isolates were defined as any Enterobacteriaceae or Pseudomonas isolate reported as "Intermediate" or "Resistant" to cefepime with a minimum inhibitory concentration ≥16. Cefepime-susceptible isolates were defined as any isolate with an MIC <16 which was also phenotypically reported as cefepime-susceptible. Patients ≥18 years, hospitalized at Henry Ford Hospital between January 1, 2009 and December 31 2011, and having a culture positive for cefepime-non-susceptible Enterobacteriaceae or Pseudomonas species (Case 1) or cefepime-susceptible Enterobacteriaceae or Pseudomonas species (Case 2) will be included. The control population will consist of patients admitted during the same time period with a culture taken from the same anatomical site which yields a negative result. Case and control patients will be matched in a 1:1:1 ratio for analysis based on anatomical site of culture and time period from culture obtainment. Cases will be further matched to each other based on species. □□Two separate analyses will be conducted using Chi-square test to evaluate categorical data and the Mann-Whitney U test to evaluate continuous, non-parametric data. The first analysis will compare cefepime-non-susceptible cases to non-infected cases and the second analysis will compare cefepime-susceptible cases to non-infected cases. From these univariate analyses, multiple multivariate logistic regression analyses will be conducted and used to compare the resistant and susceptible phenotypes. Subgroup analyses will be conducted for the Enterobacteriaceae and Pseudomonas groups.□□Results and Conclusions:□Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the common mechanisms of Gram-negative resistance to extended-spectrum cephalosporins.

Recognize the prior literature regarding risk factors for cefepime-non-susceptible Enterobacteriacea and Pseudomonas isolation and the limitations of the case-control study design.

Self Assessment Questions:

Gram-negative Enterobacteriaceae commonly employ which of the following mechanisms of resistance against extended-spectrum cephalosporins?

A Extended-spectrum β-lactamase enzyme production

B: AmpC enzyme production

C: mecA gene production

D: a & b

Previously published case-control literature has shown which of the following risk factors to be independently associated with cefepime-resistant Pseudomonas aeruginosa isolation?

A Prior extended-spectrum cephalosporin exposure

B Hospitalization within the past 90 days

C Prior fluoroquinolone exposure

D a & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-375 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF THE VHA VISN 12 CRITERIA FOR USE FOR COLCHICINE ON THE NUMBER OF GOUT ATTACKS, EMERGENCY ROOM VISITS AND DURATION OF HOSPITALIZATIONS

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Purpose: In March 2011, the VHA VISN 12 re-classified colchicine as a formulary restricted medication with new criteria for use which caused many patients who had been on colchicine to be switched to an alternative therapy. This change stemmed from an FDA mandate which made Colcrys the only FDA approved single ingredient oral colchicine product causing a large increase in price for colchicine. The objective of this study is to evaluate whether those Veterans who no longer met criteria to receive colchicine from the Madison Veterans Affairs (VA) Hospital for either gout prophylaxis or acute gout attacks, due to new formulary restrictions, had more incidences of gout attacks, emergency room visists for acute gout attacks or longer duration of hospital stays due to gout attacks. Methods: A retrospective records review of Veteran patients who were on colchicine therapy for either acute gout attacks or prophylaxis and received formulary restricted consults for colchicine between 1/1/2008 and 10/1/2012 will be conducted. The records will be reviewed for whether the patients were eligible to remain on colchicine therapy once the new formulary guidelines went into effect or, if the patients were not eligible to continue, what medication they were converted to if any. For those patients who were then converted to alternative therapy, records will be reviewed to see whether there was any change in the number of emergency room presentations for acute gout attacks, the length of hospital stay for gout attacks or finally the overall number of reported gout attacks during an equivalent time interval before and after the restricted consult was placed. Results/Conclusions: The results and conclusion are pending

Learning Objectives:

Describe the VHA VISN 12 criteria for use for colchicine.

Explain the history behind the FDA changes impacting colchicines availability.

Self Assessment Questions:

Of the following, which represents an inclusion criteria for colchicine based on the current VISN 12 formulary criteria for use?

A Patient with a current diagnosis of Peyronie's disease.

B: Patient on chronic uric-acid lowering therapy for the past two years

C: Patient with a documented prednisone and NSAID allergy with an

D: Patient with a SCr >2.0.

In the AGREE trial, why was low dose colchicine preferred over high dose colchicine for acute gout flare treatment?

A More favorable treatment outcomes were seen in the low dose col

B More favorable side effect profiles were seen in the low dose colch

C More favorable treatment outcomes and side effect profiles were s

D No differences in treatment outcomes or side effect profiles were c

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-376 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF POPULATION VANCOMYCIN PHARMACOKINETICS IN MORBIDLY OBESE, CRITICALLY ILL PATIENTS

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Purpose: According to the World Health Organization, obesity is a significant problem worldwide and in the United States. Vancomycin remains the mainstay of therapy and is recommended for treatment of gram positive infections using weight-based dosing. The Infectious Disease Society of America suggests 15-20 mg/kg/dose (based on actual body weight) every 8-12 hours, not to exceed 2g per dose. A loading dose of 25-30 mg/kg is recommended for patients that are critically ill. Inadequate data exist to guide practitioners on the optimal method to model kinetic parameters for efficient dosing of critically ill and obese patients. Methods: This is an IRB approved, prospective population pharmacokinetic study. Morbidly obese ICU patients admitted to IU Health Methodist or University Hospitals with an order for systemic vancomycin and a central access site are eligible for enrollment following informed consent. A total of 30 patients are targeted. Inclusion criteria: ≥18-years old and BMI >40 kg/m2. Exclusion criteria: pregnancy, burns, and renal replacement therapy. Blood samples will be collected 10-12 times in group 1 (first 15 patients) and 6-8 times in group 2 throughout a dosing interval. Serum vancomycin concentrations will be batched and measured with an enzyme immunoassay, Emit 2000. Urine will be collected for creatinine clearance. Patient-related and clinical variables will be obtained to calculate a variety of weight related parameters e.g. ideal, adjusted, and lean weights as well as creatinine clearance estimations utilizing a variety of equations and body weights. Compartmental and noncompartmental methods will be used for pharmacokinetic analysis and pharmacodynamics will be evaluated through Monte Carlo simulation. Results/Conclusions: Data collection and analysis are in progress. Analysis will identify clinically relevant modeling and dosing strategies.

Learning Objectives:

Discuss variables that may alter vancomycin kinetics in critically ill patients.

Describe the pharmacokinetic parameters for vancomycin that may be altered in obesity.

Self Assessment Questions:

Which of the following variable(s) best explains the altered clearance in critically ill patients?

A Fluid resuscitation

B: Changes in tissue perfusion

C: Altered protein binding

D: All of the above

What is the loading dose of vancomycin currently recommended by the Infectious Diseases Society of America guidelines?

A 15-20 mg/kg

B 35-40 mg/kg

C 10-15 mg/kg

D 25-30 mg/kg

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-377 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CHEMOTHERAPY PATIENT COUNSELING MATERIALS AT AN ACADEMIC MEDICAL CENTER

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Purpose: The American Society of Clinical Oncology and the Oncology Nursing Society have published practice standards to address patient safety in the administration of chemotherapy. Standards addressed include patient consent and education. At the University of Chicago Medical Center, nurses currently utilize CareNotes for chemotherapy patient education. Standardized chemotherapy counseling materials have been developed by pharmacists and will be implemented within the next year. The purpose of this prospective, survey-based study is to assess patient satisfaction and knowledge using the current chemotherapy counseling process, and to identify ways to improve standardized chemotherapy counseling materials. Methods: This is a prospective, survey-based quality improvement project. A survey will be distributed to adult inpatients and outpatients receiving their first or second cycle of chemotherapy at the University of Chicago Medicine. The survey will be attached to the patients chemotherapy and will be filled out by the patient prior to completion of their current cycle of chemotherapy. The survey will contain subjective questions regarding patient satisfaction with chemotherapy counseling materials, as well as comprehension of treatment plan and adverse effects. Surveys distributed for patients receiving their second cycle of chemotherapy will also contain a brief objective assessment of patient knowledge regarding their chemotherapy and management of adverse effects. The primary objective is to measure the difference between patients self reported comprehension prior to and after the first cycle of chemotherapy, using the current chemotherapy counseling process. Secondary objectives include evaluating patient satisfaction with the current chemotherapy counseling process, knowledge of expected adverse effects of chemotherapy and symptom management. Results: To be presented. Conclusions: To be presented.

Learning Objectives:

Describe the practice standards for patient consent and education set by the American Society of Clinical Oncology and the Oncology Nursing Society

Review the proposed changes to chemotherapy counseling materials at the University of Chicago Medical Center

Self Assessment Questions:

1.Practice standards for patient consent and education set by the American Society of Clinical Oncology and Oncology Nursing Society include

A Patients do not need to provide informed consent for chemotherap
B: Only verbal education should be provided
C: Patient education is not needed for oral chemotherapy
D: Patients should be provided with written education materials prior t

The implementation of new chemotherapy counseling materials at the University of Chicago Medical Center consists of:

A Switching from pharmacist developed materials to CareNotes®
B Standardizing the format to focus on adverse effects and symptom
C Switching from nurse driven education to pharmacist driven educa
D Switching to video based education

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-669 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A HEALTH EDUCATION SERIES ON STUDENTS AND COMMUNITY SENIORS

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Statement of the Purpose The primary objective of this study is to assess student perceptions and comfort with elderly populations before and after interactions with geriatric patients. The secondary objective is to assess the knowledge gained and sustained by elderly patients after health screening/ education events. Statement of the Methods Used The study was comprised of two education-based components: (1) an education and training piece for pharmacy and physician assistan students and (2) a health screening and education piece for elderly community members. Both pharmacy and physician assistant students were invited to participate in this study. Study participants were trained on how to appropriately administer health screenings and provide patien education for each of the three events. Student knowledge and perceptions of geriatric medicine were assessed prior to participating in the study and again following the event. Elderly study participants were educated and assessed on topics pertaining to osteoporosis, hypertension, hyperlipidemia, and diabetes. At each event, participants rotated between the following booths: disease state education, "Ask a Pharmacist", and screening/ assessment. Geriatric participants were given a questionnaire on disease-state topics immediately following the event and again at 1 and 3 month intervals. Summary of (Preliminary) Results to Support Conclusion Preliminary data reveal baseline characteristics of study participants from the first event. Thirteen student participants are enrolled in the study. These students range in current professional phase rank in pharmacy school, with the majority being first year students. The average age of the enrolled elderly participant (n=59) is 71 years old. Only one elderly participant is male. The majority of the participants (86.4%) identify themselves as black/ African American. Additionally, participants most frequently reported their highest level of education completed as being either high school (47.5%) or some college classes (20.3%). Conclusions Reached Preliminary conclusions will be presented.

Learning Objectives:

Identify current issues in geriatric pharmacy education.

Outline the importance of increased chronic disease state screening and education for geriatric patients.

Self Assessment Questions:

Which of the following statements is correct?

A As the percentage of elderly patients in the United States continue
B: Geriatric education is an issue only faced within the pharmacy pro
C: Pharmacy schools tend to have adequate funding and faculty expe
D: Previously conducted studies have found that direct interaction wit

Which of the following chronic disease states is the leading cause of death within the geriatric population?

A Alzheimer's Disease
B Cancer
C Heart Disease
D Stroke

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-670 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE EFFECTIVENESS OF CURRENT VANCOMYCIN DOSING METHODS IN HEMODIALYSIS PATIENTS AND THE NEED FOR A STANDARDIZED DOSING PROTOCOL

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Background:□When dosing vancomycin in patients with serious infections, targeting troughs 15-20 g/ml is recommended. Achieving therapeutic vancomycin troughs in patients receiving intermittent hemodialysis is an ongoing challenge. ESRD patients have a larger volume of distribution compared with those with normal renal function, and therefore may require relatively larger loading doses. Historically, the hemodialysis low-flux membranes were not capable of removing significant amounts of vancomycin. Currently used high-flux membranes are known to remove approximately 30-40% of serum vancomycin post-dialysis. The use of high-flux membranes has led to the development of dosing protocols using standardized initial doses followed by supplemental doses after dialysis sessions.□□Purpose:□Evaluate the effectiveness of vancomycin dosing by random levels in hemodialysis at Henry Ford Macomb Hospital and the potential need for a standardized dosing protocol.□□Methods:□This Institutional Review Board-approved study is a retrospective chart review. Patient encounters were identified through hemodialysis patient records from December 2011 to December 2012. To be included, patients had to be greater than or equal to 18 years of age, have active orders for hemodialysis, and an order for "pharmacy-to-dose" intravenous vancomycin therapy following admission. Patients had to have a serum vancomycin level drawn within 24 hours of the initial dose. Patients were excluded if they had received any intravenous vancomycin within 7 days of the inpatient "pharmacy-to-dose" encounter, or if the first level was drawn within 6 hours of a dialysis session. Outcomes included the initial dose (mg/kg) and initial serum vancomycin level.□□Results/Conclusion:□To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the pharmacokinetic characteristics in hemodialysis patients tha should be considered when dosing intravenous vancomycin.

Discuss the effectiveness of current vancomycin dosing methods in hemodialysis patients at Henry Ford Macomb Hospital.

Self Assessment Questions:

Which of the following is true regarding pharmacokinetic properties in hemodialysis patients?

A They have a smaller volume of distribution compared with patients
B: They have a larger volume of distribution compared with patients v
C: Protein binding is higher in hemodialysis patients compared with p
D: Pharmacokinetic properties in hemodialysis are similar to those in

If your institution uses high-flux dialysis membranes, and you are dosing vancomycin in a hemodialysis patient, you should do the following:

A Obtain a vancomycin level immediately after the dialysis session.
B Expect a nonsignificant removal of serum vancomycin from a dialy
C Expect approximately 30% to 40% removal of serum vancomycin f
D Never give a loading dose of vancomycin.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-378 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACY-BASED COUNSELING PROGRAM ON ADHERENCE TO HORMONAL CONTRACEPTIVES IN COLLEGE-AGED FEMALES

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Background: Studies show that oral contraceptives are the most commonly utilized form of birth control, particularly among the younger sexually active population. However, current data shows that roughly hal of the unintended pregnancies each year occur during a month when contraception was used. Lack of patient education, ineffective contraceptive methods, and inconsistent use of contraception are among the most important factors resulting in contraceptive failure. □Statement of Purpose: To determine the impact that a pharmacist led counseling program will have on the consistent and continued use of hormonal contraceptives in college aged females. □Methods: Females aged 18-25 who presented to University Village Pharmacy with a new prescription fo birth control were asked to participate in this study. University Village Pharmacy is an outpatient pharmacy which mainly serves undergraduate students from the University of Illinois at Chicago. Each female received thorough counseling on the appropriate use of her contraceptive, focusing on when to start using the contraceptive, when backup protection is necessary, what to do in cases of accidental hormone cessation, possible side effects, and drug interactions. Participants are asked to complete a questionnaire concerning factors that have been shown to effect contraceptive adherence in previous research. Participants will be contacted via telephone on a monthly basis to assess birth control adherence, use of emergency contraception, any new desire to become pregnant, and satisfaction with current hormonal contraceptive. Patients will be asked to complete a final questionnaire at the end of the 6 month study period which assesses their satisfaction and perceived effectiveness of the initial counseling session. □Results: This study is currently in the phase of data collection. □Conclusion: This project will help determine if pharmacist counseling can help increase compliance to hormonal contraception in college-aged females, as this is a population which is at high risk for unintended pregnancy.

Learning Objectives:

Recognize the importance of educating females on appropriate use of hormonal contraceptives

Recall key counseling points that should be emphasized when counseling a female on her hormonal contraceptive

Self Assessment Questions:

About how many unintended pregnancies occur during a time when hormonal contraception was used?

A 15%
B: 25%
C: 50%
D: 75%

Which of the following is a key counseling point which should be emphasized to a female starting an oral contraceptive?

A You should never take 2 birth control pills at the same time
B You should use back up protection for at least 7 days after starting
C As long as you take the pill everyday, you will not get pregnant
D You must start the birth control pill on the first day of your period

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-671 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF COLISTIN COMBINATION THERAPY FOR MULTIDRUG-RESISTANT PNEUMONIA IN THE INTENSIVE CARE UNIT

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Purpose: Increasing resistance among gram-negative pathogens combined with a lack of new antibiotics has resulted in increased use of colistin, specifically in the intensive care unit (ICU). Recent colistin studies have focused on the presence of in vitro synergy when colistin is combined with other antimicrobial agents such as tetracyclines, carbapenems, and sulbactam. However, to date there are no published studies evaluating clinical outcomes associated with colistin combined with other antimicrobial agents. This study aims to evaluate the incidence of clinical cure in patients treated with colistin combination therapy (CCT) compared to colistin monotherapy (COL). Methods: This single-center, retrospective study includes adult patients ages 18-89 years admitted to the medical or surgical ICU between January 1, 2006 and July 31, 2012 with healthcare onset, gram-negative, multidrug-resistant (MDR) pneumonia treated for at least 48 hours with intravenous (IV) colistin. Exclusion criteria include pregnancy, incarceration, and inadequate or inappropriate management of additional pathogens concomitantly present in the respiratory culture or other cultures at the time of MDRO isolation. CCT patients must receive IV colistin combined with at least one additional agent to which the MDR organism has either sensitive or intermediate susceptibility. For the purposes of this study, IV and inhaled colistin used together will not be considered combination therapy. Primary analysis will compare the incidence of clinical cure between the CCT and COL groups, adjusted for differences in baseline characteristics. Clinical cure will be defined as improvement of baseline signs and symptoms of pneumonia (i.e. resolution of leukocytosis, fever, respiratory status) by the end of colistin therapy. Secondary analyses will include comparison of hospital mortality, infection attributable mortality, ventilator duration, and ICU, hospital, and infection related length of stay. Results/Conclusions: Data collection and evaluation is currently in progress. Preliminary results and conclusions will be presented.

Learning Objectives:

Describe the proposed mechanism for colistin resistance.

Explain the rationale for use of colistin combination therapy.

Self Assessment Questions:

Development of colistin resistance is thought to be associated with which of the following?

A Efflux pumps

B: Plasmids

C: Heteroresistance

D: Decreased cell wall porins

Which of the following has contributed to the increased use of colistin in the ICU?

A Increased development of newer antibiotics

B Increasing numbers of multidrug resistant infections

C Newer formulations of colistin with less toxicity

D Drug shortages

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-379 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REVIEW OF THE IMPACT OF THE 2011 FDA CITALOPRAM DOSING DRUG SAFETY COMMUNICATION ON PSYCHIATRIC OUTCOMES AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: In August 2011, both the FDA and drug manufacturer of citalopram released a warning which stated that patients should not take citalopram doses greater than 40mg/day or greater than 20mg/day if 60 years of age or older due to increased risk of QTc interval prolongation and Torsades de Pointes. Nationwide, many health care providers and health-systems made dose adjustments necessary to adhere to this warning. Since the Huntington Veterans Affairs Medical center adopted this practice, this project will help assess what impact this dosage reduction has had on our patients, and describe the optimal monitoring of patients after a dosage reduction of a mental health related medication secondary to regulatory communication. Methods: A retrospective chart review was performed on patients seen at the Huntington VAMC who received greater than citalopram 20mg on an outpatient basis before the initial citalopram FDA mandate came out in August 2011. Patients were stratified per the following criteria: patients under the age of 60 years who were receiving greater than citalopram 40mg daily, and patients 60 years of age or older who were receiving greater than citalopram 20mg daily. Each strata were examined for adverse events after dosage reduction. Such adverse events included hospitalization due to psychiatric causes, change from citalopram to a different SSRI, change from citalopram to a different antidepressant class, and/or addition of another antidepressant in conjunction with decreased citalopram dosage. QTc interval before citalopram dosage reduction was also compared to QTc interval after dosage reduction when available through the electronic record system. Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss citalopram dosing recommendations per the 2011 FDA citalopram drug safety communication.

Describe adverse events that may occur after reduction in citalopram dosage after the 2011 FDA citalopram drug safety communication

Self Assessment Questions:

Which of the following medication regimens would be appropriate with regard to the 2011/2012 FDA citalopram drug safety communications?

A Citalopram 80mg daily for an 85 year old male

B: Citalopram 60mg daily for a 27 year old female

C: Citalopram 40 mg daily for a 62 year old female

D: Citalopram 40mg daily for a 55 year old male

Which of the following event was most likely to happen following dose reductions in citalopram, as indicated by the 2011/2012 FDA drug safety communications?

A Change from reduced citalopram dosage to an anitpsychotic

B Change from reduced citalopram dosage to another antidepressar

C Hospitalization due to psychiatric cause

D QTc interval increase following dose reduction or discontinuation c

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-801 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADJUNCTIVE KETAMINE USE IN MANAGING SEVERE ALCOHOL WITHDRAWAL IN THE MEDICAL INTENSIVE CARDIAC CARE UNIT (MICCU)

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Purpose:□Benzodiazepines (BZD) are first line therapy in managing alcohol withdrawal and delirium tremens (DTs), however patients can experience refractory symptoms requiring other therapies. Phenobarbital or propofol are other options but both can lead to respiratory failure requiring intubation. BZDs and phenobarbital also lac N-Methyl-D-aspartic acid (NMDA) activity which may be responsible for refractory symptoms. Ketamine, an NMDA antagonist, causes minimal respiratory depression and may have an adjunctive role in controlling BZD-refractory symptoms. The objective of this study is to evaluate adjunctive use of ketamine in managing severe alcohol withdrawal or DTs in the ICU. □□Methods:□An application for Institutional Review Board (IRB) approval was submitted. Patients will be included if greater than 18 years of age, admitted to the MICCU, diagnosed with severe alcohol withdrawal symptoms, and received ketamine adjunctively when high doses of lorazepam infusions were not adequately controlling symptoms. Severe alcohol withdrawal is defined by a Clinical Institute Withdrawal Assessment (CIWA) score of greater than 20. Patients will be excluded if the MICCU severe alcohol withdrawal protocol was not utilized. The current MICCU severe alcohol withdrawal protocol includes a stepwise approach utilizing benzodiazepines and phenobarbital. Ketamine is currently not included on the alcohol withdrawal protocol and its use is determined on an individual basis. A prospective list of patients receiving ketamine infusion adjunctively for severe alcohol withdrawal has already been developed. A retrospective analysis will be performed on these patients. Data collection will include the following variables: amounts of lorazepam, phenobarbital, and ketamine; time to symptom control; duration of all continuous infusions related to alcohol withdrawal management; need for mechanical ventilation; ICU length of stay; and adverse effects of ketamine.□□Results/Conclusion:□Data analysis and results are pending and will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss medication management for severe alcohol withdrawal in critically ill patients.

Identify the potential role for adjunctive use of ketamine in severe alcohol withdrawal.

Self Assessment Questions:

What receptor does ketamine act on to have a potential role in alcohol withdrawal?

A GABA receptor
B: NMDA receptor
C: Alpha 1 receptor
D: Beta 2 receptor

Which of the following drugs is the only one to have shown a reduction i severity of alcohol withdrawal symptoms and risk of seizures?

A Lorazepam
B Phenobarbital
C Dexmedetomidine
D Ketamine

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-380 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF PHARMACY-LED PATIENT COUNSELING ON PATIENT SATISFACTION SCORES (HCAHPS)

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Beginning with fiscal year 2013 CMS reimbursement will begin to include value based purchasing (VBP), set forth by the Medicare Inpatient Prospective Payment System (IPPS). Patient satisfaction determined by HCAHPS scores will determine 30% of VBP reimbursement. The purpose of this study is to determine what impact medication counseling by pharmacy students/pharmacists has on patient satisfaction and to realize the correlation of patient comprehension to patient satisfaction.□□Students at the St. Ritas Medical Center completing their Advanced Pharmacy Practice Experiences (APPEs) as well as a PGY-1 Pharmacy Resident will be using the hospitals electronic medical record to identify patients for medication counseling. APPE students will conduct the patient counseling after being given formal instructions of the hospitals counseling process and how to appropriately document these encounters. The PGY-1 Pharmacy Resident will then follow up with patients still admitted to the medical center 24 hours after counseling to assess patients comprehension of medication information. The study will be conducted over a five month period and will include all patients admitted for at least 24 hours to the Renal Telemetry unit who are administered a new medication during their stay at the hospital. Exclusion criteria will include patients under the age of 18, non-English speaking patients, sedated patients, and patients who verbally decline either medication communication or retention questioning. Data collected for analysis will include: HCAHPS data for the months of the study, historically matched HCAHPS scores, and five month run-in HCAHPS data, number of patients counseled per day, the number of medications a patient is counseled on, results of the patient comprehension/retention survey, and the monthly census for 6K. All data collected will be maintained without patient identifiers and in a secure location.□□Results/Conclusion: Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define value based purchasing (VBP) and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scoring.

Recognize the importance of increasing patient satisfaction and the opportunity at pharmacy-led initiatives may improve HCAHPS scores.

Self Assessment Questions:

What percentage of VBP is determined by the outcomes of a hospitals HCAHPS scores?

A 10%
B: 25%
C: 30%
D: 40%

Exclusion criteria of Press Ganey to administer the HCAHPS survey not utilized in this study included:

A Patients under the age of 18
B Patient discharged to a nursing home
C At least one overnight stay at the hospital
D Patients who are sedated and/or on a ventilator during their hospit

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-672 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

STANDARDIZATION OF INTRAVENOUS INSULIN USE TO IMPROVE PATIENT SAFETY IN THE CRITICAL CARE UNIT OF AN ACUTE CARE HOSPITAL

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Purpose: Hyperglycemia in the inpatient setting is associated with prolonged hospitalizations and an increase in morbidity and mortality. The mortality risk increases in the inpatient setting both for patients with and without established diabetes. Hyperglycemia can result from many mechanisms including administration of medications, such as glucocorticoids, metabolic stress from an acute illness, and parenteral nutrition. Using a computerized glucose control software program can reduce the risk for errors and eliminate the nursing staff from using clinical judgment to titrate insulin infusions. Implementation of a computerized software program will improve patient safety and provide the highest quality of care to all patients receiving an insulin infusion. The primary objective of this study is to implement a computerized glucose control software program in an acute care hospital critical care unit.□□Methods: Columbus Regional Hospitals Chartmaxx program will be utilized to collect blood glucose levels charted on 10% of patients admitted to the critical care unit and treated with an intravenous insulin infusion from June 2011 to December 2011. The process of how the level was treated will be evaluated to determine compliance with current protocols. This data will aid in evaluating a benefit for implementation of a computerized software program to better manage glucose levels and to ensure patient safety. All FDA approved computerized glucose control software programs will be evaluated individually for compatibility with Columbus Regional Hospitals computer system, cost, level of customization, data retrieval and reporting, training of CCU staff, implementation and ease of use. After approval of a computerized program from the appropriate hospital committee, collaboration with the company to start the implementation process and training for employees will take place. □□Results: Results and conclusions will be presented a Great Lakes Residency Conference

Learning Objectives:

Define computerized glucose control software program

Discuss the benefits of implementing a computerized glucose control software program

Self Assessment Questions:

A computerized glucose control software program:

A Safely decreases the patient's blood glucose levels into target ran
B: Recommends a standard insulin infusion rate for all patients
C: Increases the chance of a patient experiencing hypoglycemia
D: Is not FDA approved for intravenous insulin infusion

Which of the following is a benefit of using a computerized glucose control software program?

A Improves patient safety of basal bolus insulin regimens
B Implements the same target range for all patients and is not indivic
C Maintains blood glucose levels within a desired target range
D Does not notify the nurse by audio alerts, only visual alerts

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-381 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A COMPARISON OF TOTAL HEALTHCARE RESOURCE UTILIZATION OF DAPTOMYCIN VERSUS VANCOMYCIN FOR THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BACTEREMIA

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Background□Methicillin-resistant Staphylococcus aureus (MRSA) infections are prevalent across the nation and pose a large resource burden for healthcare systems. Daptomycin and vancomycin are among the few antibiotics that display activity against MRSA. In a randomized trial, daptomycin was found to be non-inferior to vancomycin for the treatment of S. aureus bacteremia and right-sided endocarditis. While daptomycin is more costly than vancomycin, it requires less monitoring and is associated with fewer incidents of nephrotoxicity. However, studies are lacking comparing total healthcare resource utilization of vancomycin and daptomycin for the treatment of MRSA infections. □□

Purpose□The purpose of this study is to evaluate overall healthcare resource utilization in patients with MRSA bacteremia, septicemia, and/or endocarditis who have received either IV daptomycin or IV vancomycin.□□Methods□This is a retrospective cohort study of hospitalized adult patients who received either daptomycin or IV vancomycin from January 1st, 2010 through December 31st, 2012 for MRSA bacteremia, septicemia, and/or endocarditis. Eligible patients must be at least 18 years of age with a clinical diagnosis of MRSA bacteremia, septicemia, or endocarditis who have received at least 72 hours of inpatient treatment with either daptomycin or IV vancomycin. Patients will be excluded from the study if they had a vancomycin MIC >2, received other concurrent medications active against MRSA, or had known osteomyelitis, polymicrobial bacteremia, meningitis, or pneumonia. Patient demographics, lab values, and antibiotic usage will be collected. The primary outcome to be evaluated is the difference in total healthcare resource utilization between the two groups. Differences in total drug costs, adverse events, overall mortality, and readmission rates will also be evaluated.□□Results/Conclusions□Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the impact that MRSA infections have on the healthcare system.

Review conditions that may necessitate a switch from vancomycin to daptomycin.

Self Assessment Questions:

The average cost per admission for a patient with a MRSA infection is approximately _____than a patient with a MSSA infection.

A No different
B: Up to $2,000 greater
C: Up to $35,000 greater
D: Up to $50,000 greater

Which of the following adverse events is associated more with vancomycin than daptomycin?

A Elevated CPK
B Nephrotoxicity
C Hepatotoxicity
D Anemia

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-382 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL OUTCOMES OF ALTERNATIVE CARBAPENEM DOSING STRATEGIES

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Purpose:□□Increasing multi-drug resistant infections with limited treatment options demand strategic use of antibiotics. Carbapenems are broad-spectrum antibiotics used to treat critically ill patients with resistant, nosocomial infections and achieve maximal bactericidal activity when time over MIC exceeds 40% of the dosing interval. Following extended infusion piperacillin/tazobactam modeling by Lodise and colleagues, Saint Joseph Hospital (SJH) established a formulary substitution for all meropenem orders to be substituted to extended infusion. Alternative dosing strategies, utilizing lower cumulative doses, impact rising costs of therapy while minimizing collateral damage. □□In 2011, the P&T committee approved switching doripenem to extended infusion meropenem 500mg Q6H for all carbapenem orders. Conventional dosing of meropenem 1gm Q8H infused over 30 minutes and doripenem 500mg Q8H infused over 4 hours were no longer primarily used. If written "no substitution" then meropenem 1gm Q8H wil be dispensed still infused over 3 hours. This study will compare these three regimens, evaluating clinical and microbiological success, and cos savings of an extended infusion alternative meropenem dosing strategy. Primary objectives include the patients hospital length of stay and incidence of mortality. Secondary objectives include overall cost of therapy.□□Methods:□□A retrospective chart review of a random sample admitted from January 1, 2010 through May 30, 2012 will be performed. Study will include patients 18 years or older with positive cultures for the top six gram-negative aerobic bacteria on SJHs antibiogram who do not meet exclusion criteria. Data will be used to determine all cause mortality, sites of infection, clinical and microbiological response of an alternative carbapenem dosing strategy in comparison to extended-infusion conventional dosing. Descriptive statistics will be used to express length of stay, incidence of mortality, and cost savings generated. Study exempt from review because not collecting existing data.□□Results: Will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the utility and benefits of extended-infusion carbapenem dosing

Recall the target pharmacokinetic parameters for carbapenem antibiotics to achieve optimal bactericidal activity

Self Assessment Questions:

What benefit does extended-infusion of carbapenem antibiotics offer?

A Provides better killing effect through higher cumulative daily doses
B: Increases the time over minimum inhibitory concentration of antibi
C: Lowers the incidence of allergic reactions to beta-lactam antibiotic
D: Improves the killing effect of organisms that would normally be res

What is the goal time over minimum inhibitory concentration for bactericidal activity of carbapenems?

A 25%
B 40%
C 50%
D 75%

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-383 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CONCEPTUALIZATION, DEVELOPMENT, AND IMPLEMENTATION OF A MEDICATION SAFETY DASHBOARD AT THE VA ANN ARBOR HEALTHCARE SYSTEM

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PURPOSE: According to the Agency for Healthcare Research and Quality, medication errors account for more than 770,000 injuries each year and the Institute of Medicine reports medication errors accounting for 7000 deaths in the United States each year. Surveillance has been identified as a core element in improving medication safety. A Medication Safety Dashboard is a surveillance tool that allows information to be stored in one place so organizations can track strengths and opportunities for improvement. The VA Ann Arbor Healthcare System (VAAAHS) does not currently utilize a Medication Safety Dashboard. This project aims to conceptualize, develop, and implement a Medication Safety Dashboard at the VAAAHS.□□METHODS: Conceptualization: determine the framework necessary to create a Medication Safety Dashboard via an environmental scan and assessment of existing Medication Safety Dashboards implemented at other institutions. Development: identify data collection sources within the VAAAHS by meeting with patient safety and informatics experts; determine metrics to include on the dashboard by using information gathered from the environmental scan, experts in different clinical areas, and current tracking tools, such as Patient Incident Reports. This will identify potential areas for improvement. Implementation: build a template and import data for identified metrics.□□PRELIMINARY RESULTS: Several dashboards were reviewed to aid in conceptualization, including the ASPIRE and LinKS Dashboards. The VAAAHS has several databases available for pulling metrics, including VISTA, Datacubes, the Regional Data Warehouse, Omnicell, Alaris, and CMOP. Metrics were grouped into five major buckets - Anticoagulation, Patient Demographics, Mental Health, Womens Health, and Pharmacy Processes. A template for the dashboard was created and data for each identified metric were imported. □□CONCLUSIONS: Data analysis is ongoing and comprehensive results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain elements for implementation of a Medication Safety Dashboard within an organization

Describe the purpose of a Medication Safety Dashboard

Self Assessment Questions:

Which of the following should be included on a Medication Safety Dashboard?

A Unavoidable medication-related events
B: Medication processes that are high-risk
C: Data that will identify individuals at fault
D: Metrics that are merely interesting

What is the purpose of a Medication Safety Dashboard?

A Display indicators at a glance and track improvements in medicati
B Investigate provider-specific cases
C Create elaborate charts and graphs to impress your boss
D Prevent unavoidable medication-related events from happening

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-802 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF INDOMETHACIN PROPHYLAXIS FOR INTRAVENTRICULAR HEMORRHAGE AND INCIDENCE OF NECROTIZING ENTEROCOLITIS IN PRETERM NEONATES

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Background:□Indomethacin is a nonsteroidal anti-inflammatory drug (NSAID) that inhibits cyclooxygenase in a nonselective manner, thus preventing the conversion of arachidonic acid to prostaglandins.1 In the neonatal intensive care unit (NICU), indomethacin has commonly been used for the closure of patent ductus arteriosus (PDA). Starting in the 1990s, Ment and colleagues published a series of studies that showed that indomethacin had the potential to decrease the incidence of severe intraventricular hemorrhage (IVH).2 In 2011, The Ohio State University Wexner Medical Center (OSUWMC) instituted the use of indomethacin for IVH prophylaxis in extremely-low-birth-weight (ELBW) preterm neonates. Indomethacin has been associated with severe gastrointestinal (GI) adverse effects, decreased blood counts, and renal impairment.□□Purpose:□The purpose of this evaluation is to determine if the use of indomethacin for IVH prophylaxis led to an increased incidence of necrotizing enterocolitis (NEC) or abdominal perforations. Secondary objectives include IVH status, nephrotoxicity, thrombocytopenia, low hemoglobin, and incidence of hospital mortality. □□

Methods:□This is a retrospective, medication use evaluation of the use of indomethacin in the NICU. The study sample contains all preterm neonates admitted to the NICU who received at least one dose of indomethacin between October 15, 2011 and October 15, 2012 at OSUWMC. Data obtained for the evaluation includes demographics (gestational age, gender, birth weight, and height), Apgar scores, pertinent laboratory values (serum creatinine, hemoglobin, and platelet count), number of doses received, concomitant nephrotoxic medications IV access, days of treatment, resuscitation requirements, resuscitation medications, and admitting attending.□□Results/Conclusion: □The 12-month evaluation of preterm neonates who received indomethacin showed a correlation between low Apgar scores, gestational age, birth weight, and the development of GI adverse effects.

Learning Objectives:

Recognize the risk and benefits of indomethacin for the use of IVH prophylaxis in preterm neonates.

Discuss the role of indomethacin in the NICU and the need for restrictions.

Self Assessment Questions:

Which of the following is a serious adverse effect associated with administering indomethacin to preterm neonates?

A Hypotension
B: Angioedema
C: Necrotizing enterocolitis
D: Hyperkalemia

What is the dose and frequency of indomethacin for IVH prophylaxis in preterm neonates?

A 0.25 mg/kg every 12 hours for 2 doses
B 0.1 mg/kg every 24 hours for 3 doses
C 0.2 mg/kg every 24 hours for 3 doses
D 0.1 mg/kg every 12 hours for 2 doses

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-803 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

GRANULOCYTE-COLONY STIMULATING FACTOR (G-CSF) USE IN PERIPHERAL BLOOD AUTOLOGOUS STEM CELL TRANSPLANT AT AN ACADEMIC MEDICAL CENTER: A RETROSPECTIVE ANALYSIS

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Purpose □In June 2012, the Indiana University Simon Cancer Center decided to no longer use G-CSF support as standard of care after autologous stem cell transplant (SCT), despite the American Society of Clinical Oncology (ASCO) recommendations. The purpose of this project is to determine the effects of filgrastim on length of stay and transplant related costs in patients who received autologous peripheral blood stem cell transplant (PBSCT). □ □Methods □The study is a retrospective analysis including patients who received an autologous PBSCT from January 2012 through December 2012. The study is comparing patients who did and did not receive filgrastim as primary prophylaxis to accelerate recovery of neutrophil count and reduce length of stay. The primary endpoint of the study is length of stay post transplant. The secondary endpoints include a cost-benefit analysis, rate of febrile neutropenia, number of transfusions, time to neutrophil and platelet recovery, and overall survival. □□Preliminary Results □

Pending □□Conclusions□Pending

Learning Objectives:

Describe the rationale behind the use of G-CSF in patients who receive an autologous PBSCT

Explain why G-CSF is not recommended after allogeneic SCT

Self Assessment Questions:

Which of the following statements regarding the use of G-CSF with autologous SCT is true?

A Decreases length of stay post-transplant
B: Decreases rate of febrile neutropenia
C: Accelerates recovery of platelet count
D: Increases overall survival

Which of the following statements regarding the use of G-CSF with allogeneic SCT is true?

A Increases length of stay post-transplant
B Increases rate of graft-versus-host disease
C Decreases overall survival in PBSCT
D Slows down recovery of neutrophil count

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-384 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DOSING STRATEGIES AND SAFETY OF DEXMEDETOMIDINE IN NEONATES AND INFANTS

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Purpose: This study was undertaken to describe the off-label use of dexmedetomidine, including dosing and duration, in neonates and infants in the pediatric intensive care unit. Patients were also evaluated for cardiovascular adverse events. Neonates and infants were compared to determine if differences in prescribing or safety existed.

Methods: Patients with corrected gestational ages of at least 37 weeks who were less than 12 months old during infusion of dexmedetomidine at Riley Hospital for Children at Indiana University Health between October 2007 and August 2012 were assessed. Patients were excluded if dexmedetomidine was used for cardiovascular surgery, procedural sedation, or post-neurosurgery with an immediate wean in the PICU. Demographic data, vital signs, and concomitant receipt of antihypertensives, vasoactive drugs, opioids, and other sedatives were collected retrospectively. Specific dosage information was collected, including dose range, duration, use of loading dose, and indication for dexmedetomidine. Preliminary Results: A total of 127 neonates (n = 28) and infants (n = 99) who received dexmedetomidine were included in the study. Preliminary analysis identified 30/99 (30.3%) and 55/99 (55.6%) infants who experienced at least one episode of hypotension or bradycardia, respectively. In this population, dosages ranged from 0.1 - 1.5 mCg/kg/hr with a median duration of 42 hours (IQR = 19-84) and maximum of 338 hours. Nearly 65% of infants received other medications that may have contributed to hypotension or bradycardia, and approximately 75% received other sedative agents while on dexmedetomidine. Hypotension was experienced in 4/28 (14.3%) neonates and bradycardia was seen in 2/28 (7.1%). Dosages ranged from 0.1 - 1 mCg/kg/hr with a median duration of 38.5 hours (IQR = 14.8 69.8) and a maximum of 121 hours. Approximately 32% received other medications that may have contributed to hypotension or bradycardia, and almost 54% received other sedative agents in addition to dexmedetomidine. Conclusions: Data analysis is ongoing. Final results will be presented.

Learning Objectives:

State the benefits of dexmedetomidine as a sedative agent.

List common adverse events associated with the use of dexmedetomidine.

Self Assessment Questions:

Which of the following statements about the benefits of dexmedetomidine is true?

A Dexmedetomidine has analgesic-sparing properties.

B: Dexmedetomidine has a long half-life allowing once daily dosing.

C: Dexmedetomidine causes less respiratory depression than benzoc

D: Both A and C.

Which of the following is a common adverse event associated with the use of dexmedetomidine?

A Tachycardia

B Hypotension

C Hypoglycemia

D Redness and flushing

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-385 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND SAFETY OF TRANEXAMIC ACID VERSUS E-AMINOCAPROIC ACID IN CARDIOVASCULAR SURGERY

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Purpose: Blood conservation is a major concern in the management of surgical patients due to limited supply, cost, and transfusion-related complications. Tranexamic acid (TXA) and ε-aminocaproic acid (EACA) are lysine analogues used in cardiac surgery to reduce total blood loss and decrease the number of blood transfusions. TXA and EACA inhibit fibrinolysis by interacting with the lysine binding site of plasminogen. TXA is about 10 times more potent and 100 times more expensive than EACA. A 2011 analysis of the Blood Conservation using Antifibrinolytics in a Randomized Trial (BART) concluded that EACA has increased clinical value compared to TXA due to comparative efficacy and safety, and its greater cost-effectiveness. However, the 2011 Society of Thoracic Surgeons and Society of Cardiovascular Anesthesiologists Blood Conservation Guideline recommend lysine analogues (TXA or EACA) for intraoperative blood management. The objective of this study is to evaluate the efficacy and safety of tranexamic acid compared with ε aminocaproic acid in the management cardiovascular surgical bleeding. Methods: Prior to commencement, Rush University Medical Center and Midwestern University Institutional Review Boards approved the study. This is a single-center, retrospective, and observational cohort study. Inclusion criteria are patients 18 years of age or older, undergoing cardiac surgery with or without cardiopulmonary bypass, who received at least one dose of perioperative TXA between January and December 2012 or EACA between January and December 2011. Patients undergoing cardiac transplant, left ventricular assist device, or congenital defect surgery will be excluded from this study. All data will be retrospectively reviewed in EPIC electronic medical record. A data collection tool for demographic data, baseline characteristics as well as primary and secondary outcomes will be completed for each patient. Results/Conclusions: This study is still under investigation. Results and conclusion will be presented at the Great Lakes Residency Conference

Learning Objectives:

Explain the risks associated with blood products transfusion as a therapeutic modality

Discuss the results of the Blood Conservation using Antifibrinolytics in a Randomized Trial (BART)

Self Assessment Questions:

Which of the following risks is/are associated with the transfusion of blood and blood products?

A Infection

B: Thrombocytopenia

C: Transfusion related acute lung injury (TRALI)

D: A and C

According to the analysis of the BART trial, ε-aminocaproic acid has increased clinical value when compared with tranexamic acid due to:

A Comparable cost

B Comparable efficacy and safety

C Increased potency

D Decreased volume of high-risk cardiac surgery

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-386 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND EVALUATION OF MODELS FOR CENTRALIZED UNIT-BASED CABINET FILLING ACROSS A MULTI-HOSPITAL HEALTH SYSTEM

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Purpose: Increasing financial strain in healthcare has pushed organizations to find means of increasing efficiency and decreasing costs without compromising patient care. Aurora Health Care uses a centralized Packaging Center to prepare and distribute unit-dose products to all 15 system hospital sites and has developed other centralized workflow processes to control inventory costs and make labor more efficient. Unit-based cabinet inventory is currently maintainec independently at each hospital site, and each site designs its own workflow for the restocking of its cabinets. The objective of this project is to develop centralized models for unit-based cabinet filling and to evaluate the economic and workflow consequences of these models. Implementation of a model will depend on the evaluation results.□□Methods: Information was gathered from each hospital site regarding current processes of cabinet filling via survey. Time requirements and efficiency of current processes were assessed by comparison across different sites. Models for a centralized process were designed taking into account inventory changes, transportation requirements, technician workflow changes, cost of materials, and technologies available at various sites. Meetings were held with the organizations courier to map potential routes of delivery with various models. Inventory reports were used to optimize cabinet inventory management and prevent stock-outs in cabinets. A pilot will be conducted at select hospital sites to trial new processes and provide feedback for model improvement. Pilot will be assessed by direct observation, time estimates by staff, and analysis of cabinet data. A cos analysis of possible models is currently underway.□□Results/Conclusions: It was determined that due to transportation restraints, a regional model may be more productive than a completely centralized model. Both models are still being evaluated and pilot is currently being planned. Final results and conclusions will be presented at the conference.

Learning Objectives:

Recognize benefits of centralized processes and inventory management in a multi-hospital health system

Identify barriers to centralized product inventory and distribution

Self Assessment Questions:

What is a benefit of using centralized workflow processes across a multi hospital health system?

A Increased drug costs

B: Improved efficiencies in completing tasks due to decreased interru

C: Decreased technology in the dispensing role of pharmacy

D: Increased staff necessary to complete tasks

What is a barrier to centralized drug inventory and distribution across a multi-hospital health system?

A Improved management of drug inventory by centralizing inventory

B Reduced productivity by one location performing the same task re

C Need for timely turn-around between site needing product and site

D Training required to perform tasks off-site is very difficult

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-673 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIMICROBIAL DOSING PRACTICES FOR PATIENTS RECEIVING CONTINUOUS VENO-VENOUS HEMODIALYSIS

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Background: To optimize outcomes in patients with sepsis and renal insufficiency, adequate and timely administration of antimicrobials, infection source control, and renal replacement therapy are required. Continuous venovenous hemodialysis (CVVHD) supports kidney functio with improved hemodynamic stability, but it also alters the pharmacokinetics of many medications. This adds to the complexity of appropriately dosing medications for these patients, particularly antimicrobials. To assist prescribers at the Cleveland Clinic, guidelines for antimicrobial dosing (including dosing for patients receiving CVVHD) are widely available and distributed. Yet, the extent of compliance with these dosing recommendations is unknown. □□Objective: To describe antimicrobial dosing practices in patients on concomitant CVVHD at the Cleveland Clinic, specifically the number of days that antimicrobials are dosed in accord, above, or below recommendations.□□Methodology: A non-interventional retrospective chart review will be conducted on data extracted from the shared medical record in patients admitted from August 1 to September 30, 2012. Patients initiated on CVVHD with a minimum of 24 hours of concomitant therapy with one or more study antimicrobials, given intravenously will be included. Excluded antimicrobials include vancomycin, aminoglycosides, and prophylactic doses of acyclovir, fluconazole, or sulfamethoxazole/ trimethoprim. The primary endpoint is the proportion of overall study days that the total administered daily antimicrobial dose falls within the study reference range (as noted in institutional guidelines). Secondary endpoints include describing explanatory factors for dosing below recommendations, time to appropriate antimicrobial dosing after initiation of CVVHD, appropriateness of new antimicrobial orders, and dose adjustments in patients converted to intermittent hemodialysis. Data regarding demographics, CVVHD therapy, antimicrobial therapy administration anc order verification, as well as recommendations from pharmacists, and Infectious Diseases and/or Nephrology consult services will be collected Data will be analyzed with descriptive statistics and Kaplan Meier plots, as appropriate.□□Results and conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify factors that affect antimicrobial dosing in patients receiving CVVHD

Describe the design, methods, and results of the project

Self Assessment Questions:

Appropriate antimicrobial therapy is dependent on which of the following

A Timely administration

B: Correct dose and frequency

C: Appropriate empirical therapy

D: All of the above

Which of the following is a CVVHD-related (not drug- or patient-related) factor that influences antimicrobial dosing?

A Blood flow rate

B Dialysate flow rate

C Source of infection

D Drug volume of distribution

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-674 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ESTABLISHING PHARMACIST PRESENCE ON A RAPID RESPONSE TEAM: A PILOT STUDY AT AN ACADEMIC MEDICAL CENTER

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Purpose: Approximately 84% of patients have an acute deterioration within 8 to 48 hours of cardiac arrest, most often manifested as hypotension or tachypnea. Accordingly, the Institute for Healthcare Improvement recommends implementation of rapid response teams as a part of their 100,000 Lives Campaign to reduce preventable hospital deaths. Currently at Froedtert Hospital, ACLS trained pharmacists respond to codes 24/7, but do not have a formal role on the rapid response team. There are no published studies that have investigated the impact of pharmacists on rapid response teams. Therefore, the purpose of this project is to assess the impact of a pharmacist presence on a rapid response team by conducting a three month pre-post interventional pilot study. Methods: Retrospective data from patients admitted to inpatient medical units at Froedtert Hospital who triggered a rapid response event between August 2012 and October 2012 were evaluated. The primary objective of the retrospective analysis is to determine the average number of rapid response events that require medication intervention each day. Pertinent secondary objectives are to determine the turnaround time for the most frequently administered medications, the most frequent predisposing factors, and the number of rapid responses that result in subsequent ICU admission or cardiac arrest within 48 hours of the event. A pilot study will be conducted between March 2013 and May 2013 with pharmacists responding to all rapid responses. The pharmacists will have standardized medication dosing cards and training on how to handle common scenarios of a rapid response event. Turnaround time of most frequently administered medications, the most frequent predisposing factors, pharmacist interventions, and admissions to the ICU will be compared. Results/Conclusions: Data collection and analysis of the retrospective review will be presented at the Great Lakes Pharmacy Residency Conference along with interim results of the pilot study.

Learning Objectives:

Describe the importance and role of rapid response teams within the hospital.

Discuss the potential role and impact of the pharmacist on rapid response teams.

Self Assessment Questions:

Implementation of rapid response teams decreases in-hospital cardiac arrest

A True
B: False
C: N/a
D: N/a

What class of medications are the most frequently administered medications during rapid response events at Froedtert Hospital?

A Reversal Agents
B Acute treatment of atrial fibrillation
C Antibiotics
D Anti-seizure medications

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-675 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING PARENTERAL NUTRITION ORDERING PRACTICES BEFORE AND AFTER PHARMACIST LED EDUCATION

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Purpose Enteral nutrition (EN) has been shown superior to parenteral nutrition (PN) and is the preferred route of nutrition support in patients who cannot meet their nutrition requirements orally. EN is associated with improved outcomes in comparison to PN, which is associated with increased rates of adverse complications, as well as increased costs. PN should be reserved for patients who have a true indication for its use. Despite the support of this practice in literature, as well as the American Society of Parenteral and Enteral Nutrition guidelines, inappropriate initiation of PN remains common practice. Coupled with ongoing and worsening drug shortages, reducing inappropriate use of PN is critical. The aim of this study is to improve patient care, reduce the risk of PN-related complications, and provide cost-effective care. Methods In, this study, drug utilization review was performed on the prescribing practices of physicians at Union Hospital, a 378 bed, non-profit hospital in Terre Haute, Indiana. Data was collected through retrospective chart review and included day from admission to start of PN, duration of PN therapy, primary diagnosis and criteria for PN initiation, prescriber, and central versus peripheral administration. Hospital cost was calculated based on a standard formula, taking into account supplies, equipment, and staff time. Following data collection, pharmacist-led education was provided to physicians and nurses on the appropriate use of PN, risk of PN-related complications, and benefits of EN versus PN. The education was tailored to the preliminary data results and indicators of inappropriate PN utilization. Re-evaluation of the same data will follow pharmacist-led education. Primary outcome and data analysis will measure the change from baseline in ordering practices of physicians and associated hospital costs after pharmacist led education. Results Data collection and analysis is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss current guidelines from the American Society of Parenteral and Enteral Nutrition (A.S.P.E.N.) regarding appropriate parenteral nutrition indications, risks of parenteral nutrition-related complications, and benefits of enteral nutrition versus parenteral nutrition.

Describe common indicators of inappropriate parenteral nutrition prescribing at Union Hospital and interventions made to improve patient care.

Self Assessment Questions:

Which of the following is true regarding enteral nutrition?

A Increased risk of infection when compared with parenteral nutritior
B: Increased cost when compared to parenteral nutrition
C: Improved outcomes when compared to parenteral nutrition
D: Increased risk of complications when compared to parenteral nutri

Which of the following could be an indicator of inappropriate parenteral nutrition prescribing?

A Initiating PN after patient has been NPO for 36 hours
B Initiating PN in a patient with a functional GI tract
C Initiating PN in a patient with gastric residuals of 200 mL
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-387 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REVIEW OF TYPE 2 DIABETES MELLITUS TREATMENT OF AN AMBULATORY ELDERLY VETERAN POPULATION

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Purpose: Guidelines for management of type 2 diabetes mellitus (T2DM) recommend a hemoglobin A1c (A1c) goal of less than 6.5-7% for most patients. Guidelines emphasize that glycemic goals be individualized based on patient factors such as life expectancy, the presence of microvascular complications, frailty and fall risk, and comorbid disease. Studies have raised concern about the safety of intensive glycemic control. Geriatric patients are more vulnerable to the adverse effects of T2DM treatment. Limited data is available describing the management of T2DM in patients 75 years or older in the ambulatory care setting. Additionally, no data is available on whether A1c goals are individualized. The primary objective of this study is to describe the treatment of T2DM in older adults at the VA Ann Arbor Healthcare System (VAAAHS). Secondly, the study will evaluate the safety of T2DM treatment by reviewing the incidence of hypoglycemia and hyperglycemia. Finally, this study will determine whether A1c goals are individualized and whether this practice varies depending on provider type. Methods: A retrospective chart review will be conducted to evaluate the treatment of T2DM patients at VAAAHS. Patients age 75 years and older with T2DM managed by VAAAHS providers from 08/01/11 to 07/31/12 will be included. Charts will be abstracted to identify if T2DM is being managed by lifestyle changes alone, non-insulin medications, insulin, or a combination of insulin and non-insulin medications. Data will be collected on comorbid medical conditions, laboratory results, and medications. A randomly selected subset of charts will be reviewed for safety issues not captured by abstraction and for documentation of A1c goals. Descriptive statistics will be reported. In cases where comparisons show statistically significant differences, Pearsonss chi squared or Fischers exact test will be used for analysis.

Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the treatment of elderly patients with T2DM managed by VAAAHS.

Discuss the relationship between T2DM treatment and the incidence of comorbid disease states and concomitant medications.

Self Assessment Questions:

What is the second most common medication associated with emergency hospitalizations for adverse drug events in the U.S. elderly population?

A Insulin
B: Glimepiride
C: Warfarin
D: Ibuprofen

The Action to Control Cardivascular Risk in Diabetes (ACCORD) was halted early after a safety analysis showed that intensive glycemic control was associated with:

A Increased microalbuminuria
B Increased mortality
C Increased retinopathy
D Increased nephropathy

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-388 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A MEDICATION REFILL SYNCHRONIZATION PROGRAM ON MEDICATION ADHERENCE AND CLINICAL OUTCOMES AT AN OUTPATIENT PHARMACY AFFILIATED WITH A PRIMARY CARE CLINIC

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Purpose: Medication non-adherence creates a barrier to the treatment of chronic medical conditions and is associated with adverse outcomes and higher costs of care. Reasons for non-adherence are complex and multi-factorial. One strategy proposed for patients taking multiple chronic medications is prescription refill synchronization. This strategy aims to coordinate prescription refills on a scheduled basis by the completion of a consultation with a pharmacy staff member. A medication refill synchronization program was created in January 2012 at the St. Vincent Joshua Max Simon Primary Care Center (PCC) pharmacy for patients identified as non-adherent to filling their medications. This study evaluated the impact of the refill synchronization program on medication adherence and clinical outcomes in patients with diabetes, hyperlipidemia, and hypertension. Methods: Patients enrolled in the refill synchronization program beginning in January 2012 were included in this retrospective, pre-post cohort analysis. Patients were excluded from analysis if they utilized any pharmacy outside of the PCC pharmacy to fill chronic medications or if they had been using the PCC pharmacy for less than 6 months prior to enrollment in the program. The primary objective was to assess a change in refill adherence with all chronic medications. Adherence was measured utilizing a medication possession ratio (MPR). Secondary objectives included achievement of adherence in medication filling, defined as obtaining a MPR of 80% or greater, and improvement or achievement of clinical goals relating to diabetes, hyperlipidemia, and hypertension. Prescription refill history and clinical data including blood pressure, hemoglobin A1C, and fasting lipid panel prior to enrollment in the program and at 3, 6, and 12 months post enrollment were collected. Patient data was collected via electronic medical records for clinical data and via pharmacy database for medication refill information. Results/Conclusions: Results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss consequences of medication non-adherence.

List reasons for medication non-adherence.

Self Assessment Questions:

Which of the following statements regarding medication non-adherence is true:

A Medication adherence in chronic disease has been reported to be
B: 33% - 69% of medication-related hospitalizations are linked to me
C: c. The cost associated with medication non-adherence is believe
D: All of the above

Which of the following is considered a preventable reason for medicatio non-adherence:

A Experiencing an adverse drug effect, such as diarrhea with metfor
B Irregularly refilling chronic medications, such as losartan for high b
C Experiencing an adverse drug event, such as angioedema from lis
D Having a mental illness, such as Alzheimer's Disease

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-676 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ORAL CHEMOTHERAPY PRESCRIBING AT AN OUTPATIENT ONCOLOGY CLINIC

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As the field of oncology evolves, oral chemotherapy is taking a larger role in the treatment of malignancies. Oral chemotherapy has decidedly different challenges when compared to intravenous chemotherapy. Complex dosing regimens, administration techniques, patient compliance and adherence continue to complicate treating patients with oral chemotherapy. The American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) have drafted measures for oral chemotherapy in the Chemotherapy Administration Safety Standards that help address some of these issues. Currently there is a lack of data describing the consistency of prescribing for oral chemotherapy. In this retrospective chart review, prescriptions at a hospital-based outpatient oncology center are screened for the completeness of prescribing and follow up measures. This research study will be submitted to the Investigational Review Board for approval. A retrospective chart review of the top ten oral chemotherapy medications from May 2012 to July 2012 will describe compliance with ASCO and ONS Chemotherapy Administration Safety Standards. The primary outcome measure is current compliance with ASCO and ONS Chemotherapy Administration Safety Standards. Additional outcomes include utilization of the electronic health record for oral chemotherapy prescriptions, frequency of pharmacist interventions on oral chemotherapy prescriptions, and the use of the oncology point of care pharmacy located within the center.

Learning Objectives:

Recognize the aspects of oral chemotherapy that present challenges as compared to intravenous chemotherapy

List ways to improve the prescribing of oral chemotherapy

Self Assessment Questions:

Which of the following is a key similarity between oral and intravenous chemotherapy?

A Both are administered in the clinic in the presence of a physician.

B: Both oral and intravenous chemotherapy can be toxic.

C: Patients receiving oral chemotherapy have an equal number of he

D: New oral and intravenous chemotherapy agents are being develop

What is a possible way to improve prescribing of oral chemotherapy?

A Use pre built prescription templates when prescribing oral chemoth

B Allow only hand written prescriptions for oral chemotherapy.

C Allow for multiple refills when writing for oral chemotherapy.

D Give printed prescriptions to the patient and e-prescribe the same

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-804 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND EVALUATION OF A TRAINING PROGRAM FOR THE INDIANA MEDICATION MANAGEMENT PARTNERSHIP

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Purpose: To develop and evaluate a training program for Indiana Medication Management Partnership (IMMP) participating pharmacists. IMMP is being formed as a statewide network of pharmacists seeking to 1) optimize medication management through the prevention, detection and resolution of drug therapy problems, 2) prevent hospital admissions/readmissions and emergency department consultations, and 3) lower overall healthcare costs through the provision of Medication Therapy Management (MTM) services. Methods: A training program is being developed to complement previous pharmacists experience and education in MTM provision. Training will include an overview of the IMMP structure and MTM plans offered, billing procedures and payment structure, documentation principles, and tips for successful MTM delivery. An online survey is currently being developed to measure the effectiveness of the IMMP training program over the first three months o IMMP pharmacist enrollment and to identify potential areas for training program improvement. The survey will consist of a combination of closed- and open-ended questions addressing each component of the training program. After IRB approval is obtained, the survey will be administered to pharmacists at three time points: immediately prior to training, immediately following training, and one month after training. The primary outcome will be pharmacists confidence in providing MTM services through a statewide network and will be measured using a 5-point Likert-type scale. In addition, pharmacists confidence with regards to each component of the training program will be evaluated to determine which areas should be emphasized in future training. Data will be analyzed using parametric and nonparametric statistics as appropriate. Results: The preliminary results will be presented at the 2013 Great Lakes Pharmacy Resident Conference. Conclusions: It is anticipated that the results of this project may inform training efforts of other states working to implement statewide MTM networks.

Learning Objectives:

List the components of IMMP training.

Recall the barriers to MTM that can be addressed through a statewide network.

Self Assessment Questions:

Which of the following will be covered in IMMP training?

A Tips for successful MTM delivery

B: Documentation principles

C: An overview of IMMP

D: All of the above

Which barriers to MTM are most likely to be addressed through a statewide network?

A Insufficient compensation

B Shortage of pharmacist time

C Pharmacies having an insufficient volume of patients to justify serv

D Both A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-389 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CORRELATING RISK FACTORS TO MAJOR HEMORRHAGE IN PATIENTS RECEIVING DABIGATRAN

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Background: Dabigatran is an oral anticoagulant that was FDA approved in October 2010 for stroke prevention in patients with non-valvular atrial fibrillation. There have been several case reports of serious, sometimes fatal bleeding in patients receiving this medication. Dabigatran currently has no antidote to reverse its anticoagulant effect, which makes identification of patients more prone to bleeding of high importance. Purpose: The objective of this study is to identify, characterize, and compare risk factors for major hemorrhage in patients receiving dabigatran. Methods: This study was a retrospective chart review. Patients who received dabigatran were identified from the pharmacy database. Patients in this list were cross-referenced with patients that had ICD-9 codes associated with major hemorrhage, transfusion and atrial fibrillation. ICD-9 codes associated with major hemorrhage were validated by a comprehensive literature search. Confirmation of major hemorrhage was conducted during manual chart review by applying ISTH criteria, and evaluating diagnostic imaging studies. Patients receiving dabigatran with no evidence or ICD-9 coding for hemorrhage were placed in the non-hemorrhage group. Data collected for both groups included: demographics, admission/discharge date, medical/surgical patient, ICU-admission, ICD-9 codes, hepatic function, renal function, drug interactions, time on therapy, documentation of hemorrhage, hemoglobin changes, procedures, and presence of anticoagulant bridging. In addition, patient history was searched to identify risk factors, including: prior stroke, hypertension, alcoholism, hepatic and renal disease, genetic predisposition to bleeding, history of falls, and cancer. Outcomes for major hemorrhage were analyzed for: death from bleeding, hospice transfer, ICU-transfer, length of stay, and permanent cessation of anticoagulation due to hemorrhage. Validated risk scores used to identify patients who are more likely to bleed (HAS-BLED, HEMORR2HAGES, and CHADS2) were calculated for each patient. Results/Conclusions: To be presented at Great Lakes Conference.

Learning Objectives:

Identify potential risk factors for major hemorrhage in patients receiving dabigatran.

Review the recommended dosage of dabigatran for patients with normal and compromised renal function with or without drug interactions.

Self Assessment Questions:

What is the appropriate dose of dabigatran for a patient with a creatinine clearance of 24 mL/min and no drug interactions?

A 150 mg by mouth once daily
B: 150 mg by mouth twice daily
C: 75 mg by mouth once daily
D: 75 mg by mouth twice daily

Which of the following is true?

A Based on available literature, immunocompromised patients may b
B Bleeding risk scores such as HAS-BLED and HEMMORR2HAGES
C There are no validated methods in the literature that have identifie
D The primary use of the CHADS2 score is to predict a patient's risk

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-805 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TWO YEARS OF EXPERIENCE WITH AN ESTABLISHED COMPUTERIZED PHYSICIAN ORDER ENTRY SYSTEM WITH CLINICAL DECISION SUPPORT SYSTEMS

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Purpose: Computerized physician order entry (CPOE) systems that utilize clinical decision support (CDS) have greatly improved the efficiency and accuracy of health care delivery. CPOE systems allow clinicians to communicate their instructions for the care of patients to other providers instantaneously. When CPOE and CDS systems are implemented together clinicians can be advised of potential issues at the time of placing the order. Examples of CDS include alerts presented to the ordering party when ordering medications such as drug-drug interactions, drug allergies, duplicate therapies, and dose alerts. A practice that has become common amongst users of CPOE is the formulation of standardized order sets for the treatment of commonly seen diagnoses and clinical situations. These order sets often contain medication orders that are considered reasonable for use in treatment of the specified diagnoses and are derived from evidence-based clinical practice guidelines. The role of pharmacists is to ensure the safety of all medication orders and to make certain that treatment is in agreement with current standards of care. The objective of this project is to describe the impact of pharmacist review of medication orders from order sets by physicians using NorthShore University HealthSystems (NorthShore) CPOE system. Methods: A report will be generated consisting of all medication orders processed through NorthShores CPOE system between January 1st, 2011 to December 31st, 2012. From this report all medication orders from previously selected order sets will be extracted. This report will then be analyzed to describe all pharmacist interventions or edits for all medication orders from order sets during this two year period. A descriptive review of all alerts displayed to the ordering user by the CDS system will also be performed. Results/Conclusion: Collection and analysis of the data is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify and describe pharmacist interventions on medication orders from standardized order sets for selected specialties.

Review the information presented to ordering clinicians by an established clinical decision support system.

Self Assessment Questions:

Clinical decision support systems can provide warnings about potential problems with a medication order due to all of the following except:

A Selection of a higher than recommended dose
B: Duplication of therapy
C: Patient's flavor preference
D: Drug-drug interactions

Which of the following health care providers may be influenced by clinical decision support systems while placing orders?

A Nurses
B Physicians
C Pharmacists
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-806 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPROPRIATE TOTAL PARENTERAL NUTRITION (TPN) INITIATION IN HOSPITALIZED PATIENTS

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Background: National guidelines for the proper use of total parenteral nutrition (TPN) were developed by the American Society of Parenteral & Enteral Nutrition (A.S.P.E.N.) in 2002. The primary goal of these guidelines was to decrease the inappropriate use of TPN in the hospital setting. However, recent studies continue to show inappropriate TPN prescribing. Therefore, updated guidelines recommend further limiting the use of TPN to only those patients where enteral nutrition (EN) is not feasible and have not eaten for an extended period of time (≥ 7 days), have evidence of protein-calorie malnutrition, or are expected to undergo major upper gastrointestinal surgery within 5-7 days. Purpose: The objective of this study is to determine the appropriateness of TPN use in hospitalized patients. Methods: This is a retrospective chart review study that will evaluate the appropriateness of TPN use is in patients admitted to Parkview Health. Data will be collected from electronic medical records for any patient started on TPN during their hospital stay at either Parkview Hospital or Parkview Regional Medical Center. The primary outcome will be the percentage of subjects who are prescribed TPN appropriately based on indication and expected duration, as defined by the A.S.P.E.N. guidelines. Secondary outcomes will include total days of appropriate TPN use and appropriate use by service line. Patien data collected will include patient age, sex, height, weight, admitting service, ordering physician, indication for TPN, duration of TPN therapy, day oral/enteral intake initiated, and day oral/enteral intake reached > 60%. Results/Conclusions: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of appropriate TPN use among hospitalized patients.

Identify the rate of appropriate TPN prescribing practices at a local community health-system.

Self Assessment Questions:

A complication associated with TPN use includes which of the following:

A Infection in the central-vein access line

B: Aspiration

C: Hypoglycemia

D: GI bleed

Which of the following statements is correct?

A For patients recovering from major upper GI surgery, when enteral

B Appropriate indications for TPN include: major small bowel resecti

C TPN is less invasive, maintains gut integrity and has a lower rate c

D TPN is the preferred route of feeding over enteral nutrition for the c

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-390 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF VANCOMYCIN LOADING DOSE ON CLINICAL OUTCOMES

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Purpose: The 2009 consensus guidelines for the therapeutic monitoring of vancomycin recommend an aggressive dosing strategy targeting trough concentrations of 15-20 mg/L for patients with severe Staphylococcus aureus infections. Due to difficulties encountered when targeting higher vancomycin troughs, a one-time loading dose of 25-30 mg/kg for seriously ill patients was proposed in the guidelines. The principle of loading patients allows for rapid trough attainment prior to initiation of the maintenance regimen. One of the major concerns with the loading dose is the potential for nephro- and ototoxicity in patients who require high loading doses, such as obese patients. The purpose of this study was to determine the effect of vancomycin loading doses on clinical and safety outcomes. Methods: This was a retrospective, cohort study conducted within the Detroit Medical Center. Patients with methicillin-resistant S. aureus (MRSA) bacteremia with a vancomycin MIC of 1 mg/L or less and who received a vancomycin loading dose greater than 20 mg/kg were matched based on age category (18-34, 35-64, 65 or older), Pitt bacteremia score (less than 4, 4 or greater), source of bacteremia, and body mass index category to similar patients who did not receive a loading dose. All patients had to receive vancomycin for at least 72 hours. The primary endpoint was the impact of vancomycin loading doses on regimen efficacy, as determined by lack of treatment failure (in-hospital mortality, persistent signs and symptoms at the conclusion of vancomycin therapy, or persistent bacteremia of 7 days or more). Secondary endpoints included rates of target trough attainment and nephrotoxicity. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify patients who may benefit from receipt of a vancomycin loading dose

Explain the rationale behind the suggested vancomycin loading dose of 25-30 mg/kg

Self Assessment Questions:

Which of the following is an indication for administration of a vancomycin loading dose?

A Enterococcal urinary tract infection

B: MRSA pneumonia

C: MSSA wound infection

D: MRSA skin abscess

Which of the following best describes the theoretical purpose of a vancomycin loading dose?

A Allows for more rapid attainment of target trough concentration

B Allows for longer intervals between maintenance doses

C Allows for lower maintenance doses

D Allows for a higher Cmax to MIC ratio

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-391 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANSION OF PHARMACY SERVICES IN A CLINICAL CANCER CENTER - DAY HOSPITAL

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Purpose: The Froedtert Hospital Pharmacy Department is nationally recognized as a practice model leader in medication reconciliation and transitions of care. Pharmacist-conducted medication histories and discharge counseling have been shown in the literature to improve the accuracy of home medication profiles and significantly reduce medication errors. The benefit of pharmacist-provided medication education and impact on adherence and patient satisfaction has also been described in various clinic settings. However, there is limited data describing the benefits of such education in oncology patients receiving intravenous chemotherapy infusions in an outpatient infusion center. The Clinical Cancer Center (CCC) at Froedtert and the Medical College of Wisconsin is seeking to expand pharmacy services to improve patient safety, reduce the potential for medication errors, streamline transitions of care, and improve patient satisfaction in this high-risk population. The purpose of this study is to evaluate that expansion. Methods: A pilot study assessing the benefit of expanding pharmacy services in the infusion center (known as the Day Hospital) will take place from January through March 2013, with a goal of 100 patient-pharmacist interactions. A medication history and profile review will be performed by a pharmacist during scheduled outpatient infusion visits, providing the patient an opportunity to ask medication related questions. Assistance filling outpatient prescriptions will also be offered. Primary outcome measures will include number of identified discrepancies found in the home medication profile and number of prescriptions filled at the CCC outpatient pharmacy. Secondary outcome measures will include type of discrepancies found in the home medication profile, related medication interventions, and patient satisfaction with pharmacy services. Questions regarding chemotherapy agents and antiemetic regimens along with patient-specific disease state data will be collected to assess if certain patients would be more likely to benefit from pharmacist interaction. Results/conclusions: Data collection and analysis are currently being conducted. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the impact of direct pharmacist-patient interaction on the outpatient medication profile, prescription capture at outpatient pharmacies, and patient satisfaction.

Identify patients with specific factors for which direct pharmacist-patient interaction is more likely to be beneficial.

Self Assessment Questions:

It is estimated that more than _____ of medication errors are a result of inadequate reconciliation of information during transitions of care.

A 10%

B: 20%

C: 30%

D: 40%

In preliminary data, patients being treated at Froedterts Clinical Cancer Center - Day Hospital have ___ medications on their home medication profile on average.

A 4

B 7

C 13

D 21

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-807 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING INNOVATIVE PHARMACY TECHNICIAN ROLES TO ASSIST WITH TRANSITIONS IN CARE AT DISCHARGE

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Purpose: Due to changes in legislation, the discharge transition in care is a focus of hospitals to improve quality and efficiency while assuring a positive patient experience. Prescription insurance plans requiring prior authorization and patients inability to pay for prescription medications add complexity to and delay the discharge process. The University of Wisconsin Hospital and Clinics (UWHC) Pharmacy Department aims to improve the medication-related discharge transition in care through implementation and evaluation of new technician roles. Methods: Through applying a FOCUS-PDCA methodology, a resident-led team of stakeholders established a technician workforce to streamline the medication-related discharge process. Technician roles include meeting with patients upon admission to determine and document prescription insurance information, attending interdisciplinary patient care rounds to facilitate discharge planning, marketing and enrolling patients into UWHC ambulatory pharmacy programs, completing necessary prescription prior authorizations, and delivering discharge medications to the bedside. A plan was developed to pilot the roles on two inpatient care units for eight weeks. Data collected through work sampling and assessment of documented insurance gaps and interventions provided a means to extrapolate resource requirements to expand the program across UWHC. A number of pre-post analyses will be performed to determine the impact of the position on patient, nurse and pharmacist satisfaction, speed of the discharge process, and discharge prescription capture rate. Additionally, a pre-post analysis of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Press Ganey patient satisfaction scores will be completed to assess the impac this workforce has on the patient experience. Results: Pilot results revealed 53% of patients lacked up to date insurance information documented on admission. Approximately 10% of the patients enrolled into the UWHC Mail Order Program which resulted in a 77% annualized increase in net margin. Additional results will be presented at the time of the presentation.

Learning Objectives:

Describe the roles of the Transitional Care Pharmacy Specialist and identify areas to improve efficiency of the daily workflow

Recognize the benefits to implementing a Transitional Care Pharmacy Specialist or similar roles

Self Assessment Questions:

Which of the following is a service provided by the Transitional Care Pharmacy Specialist?

A Referring patients to other healthcare facilities who are in need of

B: Meet with patients on admission to determine and document presc

C: Complete medications histories for patients and document allergy

D: Work with nursing to document medication administrations at a pa

Which of the following is a benefit to the Transitional Care Pharmacy Specialist position?

A Patients are able to easily obtain free medications

B Outpatient Pharmacy fills less prescriptions thus becoming more e

C Improve documentation of prescription insurance to expedite the n

D Un-and underinsured patients have a direct referral to other health

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-677 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PILOT STUDY COMPARING ENOXAPARIN DOSING STRATEGIES IN THE BURN POPULATION AND THE INCIDENCE OF VENOUS THROMBOEMBOLISM

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Background: Recent literature suggests that traditional enoxaparin dosing for venous thromboembolism prophylaxis may not provide adequate antifactor-Xa inhibition in the burn population. Two studies published by Lin et al. have evaluated antifactor-Xa levels following initiation of enoxaparin. Statistical analyses performed in each study resulted in the extrapolation of a regression equation for dosing, with the most recent publication suggesting the following: prophylactic enoxaparin dose (mg every 12 hours) = 22.8 + 3.3 x (total body surface area (TBSA)/10) + 1.89 x (weight/10). Per standard of care at the Richard M. Fairbanks Burn Center at Wishard Health Services, enoxaparin dosing is adjusted following evaluation of antifactor-Xa levels. Levels are collected following the third dose (or later) upon initiation or change of dose and weekly once patients have reached an antifactor-Xa level within goal prophylactic range. Purpose: The purpose of this study is to determine if our current practice of adjusting enoxaparin dosing based on antifactor-Xa level correlates, or does not correlate, to the calculated dose suggested by Lin et al. while evaluating the incidence of venous thromboembolism in the study population.

Methods: The study is a retrospective review of all patients 18 years of age or older who were admitted from August 1, 2012 to February 28, 2013. All patients included must have sustained an acute burn injury of 10% TBSA or greater and were initiated on enoxaparin for prophylactic anticoagulation. The enoxaparin dose required to achieve an antifactor-Xa level within goal will be compared to the post-hoc calculated dose determined by the Lin et al. equation. The primary outcome measurements include percentage of patients who achieve target antifactor-Xa level at any time and incidence of VTE during the study period. Results/Conclusion: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define the pathophysiologic differences in the burn population that make these patients hypermetabolic.

Explain the various dosing strategies for enoxaparin initiation to prevent venous thromboembolism in the burn population.

Self Assessment Questions:

After a major burn injury, this patient population may exhibit a hypermetabolic state for up to:

A One month
B: Three to five months
C: Nine months
D: One year

Select the goal antifactor-Xa level for prevention of venous thromboembolism:

A 2 to 4 mcg/mL
B 0.2 to 0.4 mcg/mL
C 0.02 to 0.04 mcg/mL
D 0.5 to 1 mcg/mL

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-392 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF DRONABINOL IN COMBINATION WITH ONDANSETRON VERSUS ONDANSETRON ALONE FOR POSTOPERATIVE VOMITING IN NEUROSURGICAL PATIENTS

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Postoperative vomiting (POV) is a condition that can lead to many undesirable outcomes. Treatment of POV in the post-neurosurgical patient population can be particularly difficult. Due to the frequent cognitive testing required in post-neurosurgery patients, certain sedating antiemetics that might otherwise be used, such as promethazine and metoclopramide, are undesirable. Because of its low sedative side effects, dronabinol could be a valuable antiemetic in POV, but its use in the neurosurgery population has not been studied. This study aims to define the frequency and duration of vomiting in patients treated with ondansetron alone versus ondansetron plus dronabinol. Data will be collected for this retrospective review by querying electronic medical records to determine post-neurosurgery patients who received ondansetron versus ondansetron plus dronabinol. Patients will be included if they: (1) are 18 years of age or older, (2) had a neurosurgical intervention during their hospital stay, (3) had a length of stay at least 5 days post-neurosurgical procedure, and (4) had a least one episode of emesis during the 5 days post-neurosurgery. Patients will be excluded if they are taking anti-emetic medications other than dexamethasone or study medications within 7 days before and 5 days after their procedure. The following data will be collected for each patient: demographic data, risk factors for PONV, anesthetic used, type of surgery, administration o ondansetron in 5 days post-neurosurgery, administration of dronabinol ir 5 days post-neurosurgery, and total incidence of vomiting for each day post-neurosurgery up to 5 days. The number of vomiting incidences post-neurosurgery and the day of the last emesis incidence will be analyzed. The results of this study will be used to improve the understanding of dronabinols effect in the post-neurosurgery population. Data analysis is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the impact of PONV

List the risk factors associated with PONV

Self Assessment Questions:

According to the study presented by Neufeld et al., patients describe PONV as:

A A burden
B: Unpleasant, but an acceptable part of surgery
C: As troublesome as postoperative pain
D: Worse than postoperative pain

What are the four risk factors used in Apfel et al.s PONV prediction tool?

A male gender, nonsmoker, history of PONV, use of postoperative o
B male gender, smoker, history of PONV, use of postoperative opioi
C female gender, nonsmoker, history of PONV, use of postoperative
D female gender, smoker, history of PONV, use of postoperative opi

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-393 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHENOBARBITAL IN MANAGING SEVERE ALCOHOL WITHDRAWAL IN CRITICALLY ILL PATIENTS: A FOLLOW-UP STUDY

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Purpose: Alcohol withdrawal (AW) is associated with significant morbidity and symptoms can range from mild to severe, including seizures and delirium tremens (DT). The drugs of choice for managing acute alcohol withdrawal are benzodiazepines. However, some patients may have symptoms refractory to benzodiazepines. Ineffective symptom control can lead to intubation, increased ICU stay, and complications. Limited published data exists regarding the use of phenobarbital in ICU patients for severe AW. The objective of this study is to evaluate outcomes at our institution with the use of phenobarbital.□□Methods: This study is a follow-up to an observational study that evaluated the use of 1300 mg phenobarbital adjunctively for AW. This comparative study will evaluate pre-phenobarbital and post-phenobarbital outcomes. Current assessment tools for AW are Clinical Institute Withdrawal Assessment (CIWA) scores for non-intubated patients and Motor Activity Assessment Scale (MAAS) for intubated patients.□□This retrospective study will evaluate patients admitted to the Medical Intensive Cardiac Care Unit (MICCU) for severe AW from 2008 to 2012. Patients included will be evaluated for time to symptom control, cumulative doses of benzodiazepines administered, adverse effects from treatment, symptom progression requiring mechanical ventilation, and ICU length of stay. The study will consist of three treatment arms. The first will consist of patients who did not receive phenobarbital, the second group will consist of patients who received a moderate dose (650 mg) of phenobarbital, and the third group will consist of patients who received a higher dose (1300 mg) of phenobarbital. Patients will be included in the study if they meet the following criteria: admission to MICCU for severe AW, on MICCU severe AW protocol, and age greater than 18. Patients will be excluded if they were intubated prior to MICCU admission and not being treated per protocol.□□Results: Data will be presented at Great Lakes Conference in April 2013.

Learning Objectives:

Review the current pharmacological options for the treatment of alcohol withdrawal.

Identify pharmacotherapeutic advantages of phenobarbital for the treatment of severe alcohol withdrawal in hospitalized patients.

Self Assessment Questions:

Which class of medications is considered first-line therapy for the treatment of alcohol withdrawal?

A Neuromuscular Blockers (e.g. succinylcholine)
B: Tricyclic Antidepressants (e.g. amitriptyline)
C: Benzodiazepines (e.g. lorazepam)
D: Opioid Antagonists (e.g. naloxone)

Which of the following are therapeutic advantages of phenobarbital?

A No incidence of propylene glycol toxicity
B The drug has a quick onset of action and a long half-life
C Synergistic action on GABA receptors when administered with ben
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-394 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

URINE ALKALINIZATION WITH SYSTEMIC SODIUM BICARBONATE AND THE INCIDENCE OF TUMOR LYSIS SYNDROME

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Purpose:□Tumor lysis syndrome (TLS), caused by release of cellular components into the blood after lysis of malignant cells, is a complication of cytotoxic therapy initiation. Strategies to prevent TLS include hydration and diuresis, allopurinol, and occasionally rasburicase. Urine alkalinization with systemic sodium bicarbonate was historically a component of TLS prevention; however the 2008 American Society of Clinical Oncology (ASCO) guidelines no longer recommend its use given the potential complications associated with urine alkalinization and lack of clear evidence demonstrating benefit. The purpose of this study is to examine the effects of urine alkalinization on the incidence of tumor lysis syndrome in patients with acute myeloid leukemia (AML).□□Methods:□This study is a retrospective chart review with two study groups: patients who received a sodium bicarbonate infusion and patients who did not receive sodium bicarbonate prior to chemotherapy. Our study population includes patients with a diagnosis of AML who received a 7+3 chemotherapy regimen (cytarabine and daunorubicin). Patients were identified for inclusion if they received 3 consecutive doses of daunorubicin, with further identification of patients in one study arm if they received a sodium bicarbonate infusion prior to daunorubicin. Data points are being collected for all patients on days 0, 1, 2, and 7 to identify clinically significant TLS, the primary endpoint of this study. TLS is defined as: an increase in uric acid by 25% from baseline or >8 mg/dL, an increase in potassium by 25% from baseline or >4.5 mg/dL, an increase in phosphorous by 25% from baseline or >1.45 mmol/L, and a decrease in calcium by 25% from baseline or < 7 mg/dL, all occurring at the same point in time. Additional data points will assess renal function, the safety endpoint of this study.□□Results/Conclusions:□Final results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify risk factors associated with the development of tumor lysis syndrome.

Describe the differing mechanisms of action amongst medications used for the prevention of tumor lysis syndrome.

Self Assessment Questions:

Which of the following characteristics may put patients at a higher risk for the development of tumor lysis syndrome?

A High tumor burden/ bulky disease
B: Prior allopurinol use
C: Preexisting renal failure
D: A and C

Rasburicase exerts its effect to reduce the incidence of tumor lysis syndrome by:

A Inhibiting the enzyme xanthine oxidase, which blocks the metaboli
B decreasing the production of uric acid
C catalyzing the breakdown of uric acid to allantoin, an inactive and s
D None of the above

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-395 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BENCHMARKING KEY OUTCOMES IN UNIVERSITY OF CHICAGO MEDICAL CENTER KIDNEY TRANSPLANT RECIPIENTS

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Purpose: Over 2,500 kidney transplantations have been performed at the University of Chicago Medical Center since the establishment of the program in 1970, with an average of 76 transplants each year. Graft and patient survival outcomes for the institution are annually reported by the Scientific Registry of Transplant Recipients; however, this resource lacks many endpoints necessary to evaluate and/or modify center-specific protocols for immunosuppression and prevention of post-transplant complications. The purposes of this study are to evaluate the kidney transplant programs one year outcomes and to propose revisions to current practices, if necessary.Methods: The primary objective of this retrospective cohort study is to evaluate the rates of delayed graft function, infection-related complications, allograft rejection, and allograft loss at one year post-transplant. The secondary objective is to compare rates of primary objective events with those identified in transplant literature. Study participants will include individuals 18 years or older who underwent kidney transplantation at the University of Chicago Medical Center between January 1, 2010, and December 31, 2011. Multi-organ transplantations will be excluded. Recipient information collected will include patient demographics, type of kidney transplant, immunologic findings, immunosuppressive and prophylactic regimens, and occurrences of infectious complications and/or rejections. Donor demographic and immunologic information will also be collected. Data will be analyzed using descriptive statistics, with additional statistical tests utilized as appropriate.Results: To be presented at the Great Lakes Pharmacy Resident ConferenceConclusion: To be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Review the history and purpose of the Scientific Registry of Transplant Recipients.

Discuss medications utilized for immunosuppression therapy in kidney transplant recipients at the University of Chicago Medical Center.

Self Assessment Questions:

Which of the following is correct regarding the Scientific Registry of Transplant Recipients (SRTR)?

A The SRTR was established in 1977.

B: The SRTR is a national database of transplant-related statistics.

C: The SRTR provides international statistical data pertaining to solid

D: Data included in the SRTR are obtained from the United Network f

Which of the following agent(s) is/are used as induction therapy for kidney transplantations at the University of Chicago Medical Center?

A Azathioprine

B Basiliximab

C Rabbit antithymocyte globulin

D Both B and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-396 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING CLINICAL OUTCOMES FOR MRSA COVERAGE IN MRSA NASALLY COLONIZED AND NON-COLONIZED VETERANS: POTENTIAL CONSIDERATIONS FOR ANTIMICROBIAL STEWARDSHIP DECISION MAKING

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Purpose: Screening for nasal colonization with methicillin-resistant Staphylococcus aureus (MRSA) can be used as an indicator for patients likely to present with or develop MRSA infections. Results of these screens may influence empiric antibiotic decisions. The objective of this study is to determine if variable clinical outcomes exist between patients with both positive and negative screens and whether or not receiving MRSA antibiotic coverage affected these outcomes. Such findings could potentially influence antimicrobial stewardship decision making.Methods: Prior to initiation, this study design will be submitted to the Institutional Review Board forapproval. Data collection will take place in the form of a retrospective chart review. The Department of Veterans Affairs electronic medical record system, Computerized Patient Record System (CPRS), will be used to identify patients with documented MRSA nasal swab screening (within 48 hours of admission) during the time period of October 1, 2011 to October 1, 2012. Identified patients in both the negative and positive colonization groups will be included for further evaluation by meeting the following criteria: new admission with a stay of at least 48 hours, diagnosis of infection and initiation of antimicrobial order(s) that remained active for at least 24 hours. Each colonization group will then be evaluated for having received antibiotic therapy active against MRSA (agents assessed include: vancomycin, linezolid, daptomycin, doxycyline, sulfamethoxazole/trimethoprim and clindamycin). Comparisons will be made between colonization groups that received MRSA coverage and those that did not. The primary endpoint for each colonization group will be clinical improvement , which will be assessed by evaluating the following: resolution of presenting signs/symptoms (leukocytosis, fever and hemodynamic abnormalities) and documented clinical improvemen by the primary medical team.Results/Conclusions: Data collection and analysis are currently ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe how nasal MRSA screening has previously been utilized in the management of infectious diseases.

Identify situations where MRSA screening results may potentially provide insight to empiric antimicrobial treatment.

Self Assessment Questions:

Which of the following is correct in regards to screening for MRSA colonization?

A MRSA screening has minimal to no utility in optimizing infection cc

B: While MRSA screening and subsequent infection control measure

C: Studies have demonstrated its utility in optimizing effective infecio

D: MRSA screening should only be done in patients with previosuly d

Which of the following situations demonstrates the use of MRSA screening to select empiric treatment?

A Selecting ceftriaxone in a MRSA colonized patient presenting to th

B Switching from cefazolin to vancomycin in a MRSA colonized patie

C Not recommending linezolid in a MRSA colonized patient for the tr

D Starting vancomycin in a non-colonized MRSA patient developing

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-397 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECTS OF ELECTROCONVULSIVE THERAPY ON MEDICATION USE IN MENTAL HEALTH PATIENTS

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Background /Purpose: Mental illnesses affect millions of Americans each year and medications used to treat these disorders are a high cost area for pharmacies. Mental health patients frequently require complex drug regimens that potentially include antipsychotic medications, a pharmaceutical class generally associated with poor adherence rates. Electroconvulsive therapy (ECT) is an alternative, non-pharmacological treatment approach and can be effective in reducing severity of symptoms in certain psychiatric illnesses. ECT therapy has been loosely associated with a small decrease in the amount of antipsychotic medication needed to avoid relapse. The primary objective of this study is to determine if response to electroconvulsive therapy is associated with a decrease in psychotropic medication use at a large community hospital. Methods: Retrospective chart review will be completed for patients who have underwent 6 or more electroconvulsive therapy treatments from the past 4 years, have a diagnosis of bipolar disorder, schizophrenia, or major depressive disorder, and be on one or more psychoactive medication. Data collected includes account number, age, gender, race, active medications at time of ECT, and at 6 and 12 months after 6th treatment, time from first ECT to 6th ECT treatment. Results/Conclusion: Data collection is in progress. Results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the barriers to medication adherence in psychiatric patients.

Describe the importance of evaluating medication use patterns in the hospital setting.

Self Assessment Questions:

Which of the following is a common adverse reaction to atypical antipsychotics that may impair medication adherence in psychiatric patients?

A Itching

B: Weight gain

C: Diarrhea

D: Rhabdomyolysis

The top selling antipsychotic in 2011 accounted for how much in sales?

A $ 7.7 million

B $ 2.5 million

C $ 15 million

D $ 5.2 million

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-398 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DRUG USE EVALUATION OF DABIGATRAN ETEXILATE AT CLEVELAND CLINIC

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Background: Dabigatran etexilate is FDA-approved for the reduction of the risk of stroke and systemic embolism in non-valvular atrial fibrillation The lack of required laboratory monitoring, when compared with warfarin, has led to its increased use. However, dabigatran requires dose adjustments based on renal function and with concomitant use of p glycoprotein inhibitors due to a potential increased risk for bleeding. Dabigatran dosed at 75 mg twice daily for patients with CrCl <30 ml/min was not formally assessed prior to its approval. This is a drug utilization evaluation assessing the dosing of dabigatran at Cleveland Clinic in patients throughout the continuum of their hospitalization. Information gathered will allow for a thorough evaluation of dabigatran use and will serve as a platform for future studies reviewing its safety profile. Objectives: (1) Describe dabigatran doses utilized throughout the continuum of a hospitalization; (2) Identify doses used in patients with reduced renal function and in patients who are taking concomitant p glycoprotein inhibitors or inducers. Methodology: This is a non-interventional, retrospective medical chart review that entails reviewing dabigatran use throughout the continuum of a hospitalization. Study patients were identified through a drug audit. The medical record chart review started in December 2012 and data from 200 subjects was collected. Demographic data collected included: age, gender, height, weight, and serum creatinine. Additional information collected included: length of hospital stay, duration of dabigatran therapy, indication for dabigatran, concomitant use of p-glycoprotein inhibitors or inducers, and concomitant use of antiplatelets or antithrombotics. Additionally, daily assessments of CrCl and dosing of dabigatran were performed for the duration of a hospitalization for each of the study subjects. Data will be analyzed using descriptive statistics. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the FDA approved indication(s) for dabigatran use in the United States.

Recognize the importance of dabigatran dose adjustments required based on renal function and when concomitantly used with p-glycoprotein inhibitors and/or inducers.

Self Assessment Questions:

What is/are the FDA approved indication(s) for dabigatran use in the United States?

A Treatment of venous thromboembolism

B: Prevention of venous thromboembolism

C: Prevention of stroke and systemic embolism in non-valvular atrial f

D: Prevention of stroke and systemic embolism in valvular atrial fibrill

What is the appropriate dose recommendation for patients with a CrCl o 25 ml/min and receiving dronedarone?

A 150 mg PO BID

B 75 mg PO BID

C 75 mg PO Once daily

D Avoid concomitant use

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-678 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DRUG USE EVALUATION OF INTRAVENOUS ACETAMINOPHEN IN PEDIATRIC PATIENTS AT THE CLEVELAND CLINIC HEALTH SYSTEM (CCHS)

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Background: Clinical trials comparing IV acetaminophen to opioids or rectal acetaminophen in pediatric patients have not consistently found IV acetaminophen to exhibit superior pain control, decrease the need for rescue analgesia or increase the time before rescue analgesia is needed. In addition, IV acetaminophen is considerably more expensive than other formulary agents, including generic ketorolac, generic opioids and oral and rectal acetaminophen. As such, the CCHS Medical Staff Pharmacy and Therapeutics (P&T) Committee initially denied addition of IV acetaminophen to the pediatric formulary. Pediatric Anesthesia appealed the decision and presented the committee clinical reasons why IV acetaminophen was desired over other formulary pain medications. In order to control usage, the physicians also presented the committee with restrictions for IV acetaminophen use, including only permitting staff physicians from select services to order IV acetaminophen and limiting use to specific patients. Based on this appeal and proposed restrictions, the committee approved the addition of IV acetaminophen to the pediatric formulary. This DUE will determine adherence to the formulary restrictions. Methods: A non-interventional, retrospective medical record review will be conducted in order to describe adherence to the formulary restrictions for IV acetaminophen at CCHS. All patients aged 0 to 18 years old who were administered at least one dose of IV acetaminophen will be included. Patients for inclusion will be identified through EPIC reports from November 2011 to present or up to 100 patients. There are no specified exclusion criteria. Data collection points will include level of prescriber, service of the ordering provider, indication for IV acetaminophen, number of IV acetaminophen doses administered, time to rescue analgesia and total daily acetaminophen dose. Data will be analyzed using descriptive statistics. Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify CCHS Medical Staff P&T Committee approved formulary restrictions for IV acetaminophen in the pediatric population

Report adherence to CCHS Medical Staff P&T Committee approved formulary restrictions for IV acetaminophen in the pediatric population

Self Assessment Questions:

According to the CCHS Medical Staff P&T Committee approved formulary restrictions, IV acetaminophen may be used first-line in which of the following procedures?

A Strabismus surgery
B: Appendectomy
C: Orthopedic procedures
D: Incision and drainage procedures

According to the CCHS Medical Staff P&T Committee approved formulary restrictions, IV acetaminophen may be written by a staff physician from which of the following pediatric services?

A Pediatric Surgery
B Pediatric Gastroenterology
C Pediatric Pain Service
D Pediatric Otolaryngology

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-808 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THERAPEUTIC DRUG MONITORING OF VANCOMYCIN IN STEM CELL TRANSPLANT RECIPIENTS WITH NEUTROPENIC FEVER

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Purpose The Infectious Diseases Society of America (IDSA) offers guidelines on the antimicrobial treatment of patients with malignancies presenting with neutropenic fever. In these guidelines, there is no recommendation for targeted vancomycin trough levels despite recommendations for multiple indications where this agent may be used. Further, higher vancomycin trough levels have been associated with adverse effects, including nephrotoxicity. It is not known if higher versus lower vancomycin trough concentrations are associated with similar rates of infection resolution in patients with neutropenic fever. The objectives of this study are to determine if lower vancomycin trough concentrations offer equivalent effectiveness when compared to an often targeted higher trough level in stem cell transplant patients with neutropenic fever, and to determine if safety benefits are apparent with lower trough attainment. Methods This is a retrospective cohort study of patients collected from a database of stem cell transplant recipients at Northwestern Memorial Hospital with neutropenic fever. Patients will be excluded from this study if they do not meet IDSA guideline criteria for receipt of empiric vancomycin therapy. Two groups will be evaluated: patients with vancomycin trough concentrations <10 mcg/mL and patients with vancomycin trough concentrations ≥10 mcg/mL at steady state. The primary endpoint of this study is an efficacy endpoint: Infection cure as defined by a composite endpoint of resolution of systemic inflammatory response syndrome (SIRS) criteria and cleared cultures will be assessed. Evaluation of changes in serum creatinine as a surrogate marker of nephrotoxicity will be assessed as a secondary endpoint. Other secondary endpoints include development of breakthrough infections and presence of documented gram positive infection. Results/Conclusions Collection and analysis of data are still in progress. Final results and conclusions of this study will be presented at the Great Lakes Residency Conference.

Learning Objectives:

List the instances where vancomycin treatment would be appropriate to include as part of initial empiric antibiotic coverage for a stem cell transplant recipient who presents with neutropenic fever.

Discuss the side effect profile associated with vancomycin.

Self Assessment Questions:

1.Which of the following is a situation in which vancomycin should be used as empiric treatment for neutropenic fever per IDSA guidelines?

A Temperature greater than 102 degrees Fahrenheit
B: History of gram positive infection
C: Hemodynamic instability
D: Hospitalization within the past three months

Vancomycin trough concentrations ≥15 mcg/mL have been associated with which adverse effect?

A Hyperkalemia
B Nephrotoxicity
C Red man syndrome
D Seizures

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-399 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF CLOSTRIDIUM DIFFICILE INFECTION IN PATIENTS RECEIVING HIGH-RISK ANTIMICROBIALS WITH OR WITHOUT A PROTON PUMP INHIBITOR IN A VETERAN POPULATION

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Purpose□Diarrhea due to Clostridium difficile infection (CDI) is a serious nosocomial complication of antimicrobial use. Antimicrobials most commonly implicated in causing CDI are clindamycin, 3rd generation cephalosporins, and fluoroquinolones. Recent research has suggested that proton pump inhibitors (PPIs), widely used to treat gastric acid-related disorders, potentially increase the risk of CDI when used concurrently with antimicrobial therapy. The purpose of this study is to evaluate whether additional risk is conferred by the concomitant use of high-risk antimicrobials and a PPI compared to the use of high-risk antimicrobials without a PPI.□□Methods□This is a retrospective, electronic chart review of patients who were prescribed high-risk antimicrobial therapy from September 1st 2009 through September 1st 2012 at the Jesse Brown VA Medical Center. Subjects will be included ir this study if they are 18 years of age or older and prescribed an intravenous or oral formulation of ciprofloxacin, levofloxacin, moxifloxacin, clindamycin, ceftriaxone, cefotaxime, ceftazidime, or cefixime. The primary endpoint is the difference in the rate of CDI between the PPI group and the non-PPI group. To be included in the PP group, subjects must be prescribed a PPI simultaneously with a high risk antimicrobial or within the 60 day period following antimicrobial completion. Data collection will include duration of antibiotic therapy, indication for PPI therapy, method of CDI diagnosis, duration of CDI treatment, and severity of CDI. It is estimated that 2000 subjects will be included in the initial review. □□Results and Conclusion□To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the postulated mechanism behind an increased risk of Clostridium difficile infection with use of proton pump inhibitors.

Discuss the characteristics of high-risk antimicrobials implicated in Clostridium difficile infection.

Self Assessment Questions:

Which of the following statements is correct?

A PPIs disrupt the healthy intestinal flora allowing C. difficile to flouris
B: PPIs create a hypochloridic stomach environment, thereby allowin
C: PPIs interact with antimicrobials creating increased serum levels o
D: PPIs create a hypochloridic stomach environment, thereby preven

Which of the following statements is correct?

A High risk antimicrobials have a wide spectrum of antimicrobial acti
B High risk antimicrobials are administered intravenously but not ora
C Any antimicrobial administered for 14 days or longer is considered
D High risk antimicrobials are those that are associated with a high ir

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-400 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTPATIENT PHARMACY WORKFLOW REDESIGN

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Purpose:□Service excellence and operational efficiency within a hospita outpatient pharmacy are imperative to deliver exceptional patient care and to capture future business within the retail pharmacy system. The purpose of this project was to evaluate prescription and employee workflows within the UW Hospital Outpatient Pharmacy, identify waste within the prescription filling process, and implement targeted improvements based upon identified areas of deficiency. Desired outcomes of this project included improved patient experience, increased capture of discharge prescriptions, and improved employee engagement and satisfaction.□□Methods:□This project was conducted using the Find, Organize, Clarify, Understand, Select, Plan, Do, Check, Act (FOCUS-PDCA) process. First, a literature review was performed to understand methods for lean process improvement in a healthcare setting and identify prior retail pharmacy related process improvement projects. Current pharmacy workflows were illustrated using prescription processing metrics, volume data, customer satisfaction scores, direct observation, and interviewing of pharmacy staff. Prescription processing metrics included the time that a prescription spent in each pharmacy workflow step (data entry, adjudication, pharmacist review, product dispensing, pharmacist verification, and will-call). Prescription volume data captured the number of prescriptions processed by time of day, day of week, and initial fill versus refill. Baseline customer satisfaction was determined using existing online customer survey results. Pharmacy staff was invited to participate in an online survey to determine perceptions and expectations for prescription processing times, patient wait times, and customer service. These metrics were reviewed by a pharmacy task force to determine all potential process improvements. Targeted improvements were then prioritized by anticipated impact and feasibility of each improvement effort. The impact of each change implemented during the study period was determined by conducting a pre-post analysis of prescription processing times, customer satisfaction and pharmacy employee workflows. □□Summary of results to support conclusion: To be presented.□□Conclusions: To be presented.

Learning Objectives:

Identify and understand the opportunities within workflows to decrease prescription wait times and increase customer satisfaction at the UW Hospital Outpatient Pharmacy.

Describe process improvement methods used to decrease prescription wait times, optimize workflows and increase customer satisfaction at the UW Hospital Outpatient Pharmacy.

Self Assessment Questions:

According to baseline pharmacy metrics, what was the busiest time of day (prescription volume)?

A 0730-1000
B: 1000-1600
C: 1600-2000
D: Prescription volume remains relatively constant during the hours o

Which of the following reflects a challenge faced by the UW Hospital Outpatient Pharmacy?

A The majority of prescriptions are initial fills, which require more tim
B A large percentage of prescriptions received require immediate pr
C Prescription orders commonly include complicated transplant and
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-679 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CREATING A PHARMACIST STAFFING-TO-DEMAND MODEL THROUGH IMPLEMENTATION OF A NOVEL MANAGERIAL TRACKING TOOL

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Purpose: Staffing patterns in hospital pharmacies change over time as standards of practice evolve. There are few published comparisons of long-term hospital pharmacy staffing models. Pharmacist-to-patient bed ratios have increased; which may be attributed to a general decrease in hospital census. This should provide the opportunity to optimize staffing to demand. Due to the shortcomings of current staffing-to-demand models, NorthShore University HealthSystem will evaluate pharmacist staffing internally. This tool will capture essential pharmacist workload in real time to allow for the most efficient use of pharmacist time throughout the work day. This, in turn, may allow for the most efficient use of pharmacist time over longer periods across the organization. Methods: A team of pharmacy managers was consulted to develop a list of essential daily pharmacist responsibilities and expectations. This list was then used to develop output parameters and structure for a dashboard to measure anticipated daily workload. Pre-existing functionalities within the electronic health record were utilized to quantify pharmacist responsibilities. Once completed, a user satisfaction survey will be sent to evaluate pharmacy manager satisfaction and perceived efficacy of this workload measurement dashboard after implementation of the tool. This is a process management project, and therefore it is exempt from review by the Institutional Review Board (IRB). Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline steps to develop an institution specific pharmacy work load measurement tool

Identify the barriers to implementation of a pharmacist staffing to demand model

Self Assessment Questions:

Accurately capturing pharmacist productivity can be difficult due to the inability to:

A Count patient orders entered or verified by the pharmacist.

B: Measure total annual drug expenses.

C: Quantify clinical pharmacy services.

D: Utilize the electronic health record as a means of monitoring workf

An important parameter to assess after implementation of a staffing to demand tool is:

A User satisfaction

B User error

C Patient census

D Number of pharmacist hours worked

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-680 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST IMPACT ON ISCHEMIC STROKE CARE IN THE EMERGENCY DEPARTMENT

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Background: Ischemic stroke is a time sensitive, emergent condition tha requires rapid evaluation and triage. Studies have shown greater neurological improvement and better outcomes in patients treated early with alteplase. Froedtert Hospital, a Level I Trauma Center and Primary Stroke Center in Milwaukee, WI, utilizes a stroke team composed of various health professionals who respond to stroke calls. The Froedtert Acute Stroke Team (FAST) does not formally include a pharmacist member; however, emergency department (ED) pharmacists have been actively involved in patient evaluation and facilitation of alteplase preparation and administration in the ED. Pharmacists are qualified to dose and prepare alteplase for immediate administration, screen for contraindications to therapy, and assure that patients receive the appropriate dose. Purpose: The purpose of this project is to fully integrate ED pharmacists in the response to acute ischemic stroke, decreasing door to alteplase time and improving patient outcomes.

Methods: This study is a retrospective analysis of patients who received alteplase for acute ischemic stroke in the ED from January 1, 2008 to June 30, 2012. The primary objective is to compare the accuracy of alteplase dosing, average door to alteplase time, and identification of contraindications to alteplase therapy when a pharmacist was present versus absent in the ED. Secondary objectives include establishing a pharmacist role on FAST and designing a new stroke response workflow for the emergency department. Results and Conclusion: Data collection and analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List contraindications to alteplase therapy for treatment of acute ischemic stroke

Describe the appropriate dosing and preparation of alteplase for acute ischemic stroke

Self Assessment Questions:

What is the maximum total dose of alteplase that can be administered to a patient for acute ischemic stroke?

A 9 mg

B: 0.9 mg

C: 90 mg

D: 900 mg

Which of the following is a contraindication to alteplase use?

A Blood Pressure >185/110

B Potassium > 5.0 mmol/L

C Inr <1.5

D Platelets >100,000

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-401 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY, TOLERABILITY AND ADHERENCE RATES OF ZOLEDRONIC ACID, DENOSUMAB AND TERIPARATIDE IN THE TREATMENT OF OSTEOPOROSIS IN VETERANS

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Purpose: Many veterans have osteoporosis and are at a high risk for fracture due to age, medications, tobacco, alcohol, and other factors. Although oral bisphosphonates are first-line treatment for osteoporosis, some individuals cannot tolerate them for various reasons and some will lose a statistically significant amount of bone mass despite good adherence. These individuals are at an increased risk of fracture, which may increase morbidity and mortality. Thus, other therapies are necessary to increase bone mineral density (BMD) and to reduce fracture risk. Alternative therapies include zoledronic acid, teriparatide, and denosumab, but little is known about bone density response, adherence rate, and tolerability of these agents in real-world settings. This study was designed to better understand the practical utility of these alternative medications by assessing efficacy, tolerability and adherence. Methods: A retrospective chart review of veteran patients age 50 years and older at a single VA medical center utilizing data between 1/1/2005 and 5/31/2012 is being performed to evaluate the use of zoledronic acid, denosumab and teriparatide in subjects with osteoporosis. Efficacy will be assessed by evaluating changes in BMD as measured by dual-energy x-ray absorptiometry (DXA), changes in serum C-telopeptide (a marker of bone turnover), and documented occurrence of new fractures. Tolerability will be determined by assessing reported side effects and reasons for therapy discontinuation. Adherence will be calculated using the percentage of prescribed injections received for zoledronic acid and denosumab, and using medication possession ratio (number of actual prescription fills divided by number of potential fills during treatment interval) for teriparatide. Results/Conclusions: Data collection is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Classify osteoporosis severity and longitudinal progression using DXA generated BMD values and T-scores.

Recognize barriers to adherence with zoledronic acid, denosumab, and teriparatide including side effects and administration requirements.

Self Assessment Questions:

Of the following medications, which require a qualified healthcare provider to administer the drug?

A Zoledronic acid

B: Denosumab

C: Teriparatide

D: A & b

Which of the following parameters is diagnostic of severe osteoporosis?

A T score = -0.9

B T score = -3.0

C T score = -2.6 and vertebral compression fracture

D BMD = 0.674 g/cm2

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-402 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTICOAGULATION WITH INTRAVENOUS HEPARIN IN POST-OPERATIVE LEFT VENTRICULAR ASSIST DEVICE PATIENTS

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The immediate post-operative time period following left ventricular assist device (LVAD) placement is characterized by a complex state of coagulopathy where therapeutic anticoagulation carries a large bleeding risk. The objective of this study is to evaluate the use of intravenous heparin in the post-operative period of LVAD placement. Safety and efficacy outcomes include incidence of hemorrhage and thrombosis, respectively. This single-center, retrospective chart review study of post-operative heparin infusion use includes patients with a newly placed LVAD. Patients were identified through the Circulatory Support Program Database and data collected through the electronic medical record with approval from the Institutional Review Board. Inclusion criterion is placement of a HeartMate II or HeartWare LVAD within the study time period; exclusion criteria are prior LVAD placement or concurrent right ventricular assist device. Data points collected include general demographics, comorbidities, coagulation markers, liver function tests, medication administration, and measures of hemorrhage or thrombosis. Provider documentation will be reviewed for goal PTT range. No patient identifiers will be recorded for data analysis and data will remain secured. Statistical analysis will include t-tests for continuous data, chi-squared tests for dichotomous data and repeated measures modeling for comparison of PTT with heparin infusion rate. Data collection and analysis is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the recommendations provided by the manufacturers of HeartMate II and HeartWare for post-operative anticoagulation.

Discuss the comparison of early post-operative anticoagulation strategies.

Self Assessment Questions:

According to the manufacturer recommendations for HeartMate II and HeartWare, which of the following is correct:

A Both devices have recommendations to use heparin infusions to o

B: Both devices have recommendations to increase PTT goal ranges

C: Goal INR is 2.5-3.5 for HeartMate II® LVAD.

D: Both A and B.

Based on the retrospective study by Slaughter comparing 3 subsets of post-placement anticoagulation, which of the following statements is true

A There was a lower incidence of bleeding in the sub-therapeutic gro

B There was a higher incidence of bleeding in the group without hep

C There was no difference between the groups for early (post-operat

D There was a lower incidence of bleeding in the therapeutic group f

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-403 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ORAL ANTIPSYCHOTICS VERSUS LONG-ACTING INJECTABLE ANTIPSYCHOTICS: EFFICACY IN PREVENTING RECIDIVISM

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Antipsychotic pharmacologic therapy is the mainstay of chronic psychotic illness treatment as it alleviates symptoms and improves quality of life. However, relapse and recidivism remain pervasive obstacles in the treatment of patients with mental illness and many patients stop taking their medications within 30 days of discharge from a psychiatric facility. A major predictor of recidivism is partial adherence or non-adherence to a medication regimen. Although oral antipsychotics have been the standard, long-acting injectable (LAI) antipsychotics, may prove to be more effective alternatives. LAIs increase patient-provider contact, require less frequent dosing and provide an opportunity, through follow-up on missed appointments, to detect and intervene in patients at risk for non-adherence. Differences in rates of recidivism between LAI and oral antipsychotics may be an important guiding factor in antipsychotic selection. The purpose of this study is to compare the efficacy of oral versus long-acting injectable antipsychotics in preventing recidivism in patients discharged from an inpatient state psychiatric hospital. This is a single-center, prospective and retrospective study. Study subjects include all patients discharged on an antipsychotic medication from an inpatient state psychiatric hospital from April 2010 through March2013. Clinical data obtained from patient electronic charts and paper charts includes name, medical record number, date of birth, admission date, discharge date, gender, diagnostic data, medication data, and Brief Psychiatric Rating Scale (BPRS) score at admission and discharge. Data regarding follow-up appointments and follow-up outcomes will be provided by the hospitals Social Services Department. Patients will be identified upon readmission within 30 days of discharge. Microsoft Excel will be utilized for data collection and analysis. The collection of data is currently in progress. There is limited data about optimal antipsychotic selection. Upon analysis of the results, differences detected in rates of recidivism will be an important guiding factor in influencing future antipsychotic selection.

Learning Objectives:

Identify potential advantages of long-acting injectable antipsychotics in preventing recidivism.

Recognize clinical data utilized in the analysis of subjects admission and discharge characteristics.

Self Assessment Questions:

Which of the following is a potential advantage of long acting injectable antipsychotics?

A More frequent dosing

B: Increased patient-provider contact

C: Decreased opportunities to intervene

D: Less monitoring required

Which of the following clinical data is used for evaluation of patients in this study?

A Positive and Negative Syndrome Score (PANSS)

B Clinical Global Impression (CGI)

C Brief Psychiatric Rating Scale (BPRS)

D Hamilton Rating Scale for Depression (HAM-D)

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-405 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOKINETIC EVALUATION OF GENTAMICIN AND TOBRAMYCIN DOSING IN TERM NEONATES

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Background. Aminoglycosides are commonly used to treat suspected o confirmed gram-negative bacterial infections in neonates. Studies evaluating the use and exact dosing of aminoglycosides in this population are lacking. The inter-patient variability in volume of distribution and renal maturity makes the production of a single generalized dosing scheme difficult. Achievement of early goal peak concentrations has been associated with higher rates of successful clinical outcomes and helps treat organisms with higher MICs. This, however, can place the neonate at an increased risk of accumulation and toxicity. IU Health facilities currently use two different dosing regimens for gentamicin and tobramycin in neonates greater than 36 weeks post-menstrual age and seven days post-natal age. Purpose. The objective of this study is to compare the percent attainment of goal serum gentamicin/tobramycin concentrations using 2.5 mg/kg every 12 hours versus 4 mg/kg every 24 hours. Methods. This is a retrospective chart review of patients who received intravenous gentamicin or tobramycin and had at least one serum drug concentration between January 2008 to July 2012. Patients will be matched based on age, gender, indication for antibiotics, and type of serum concentration. Patients will be excluded in the following instances: sampling times undeterminable, presence of renal dysfunction or congenital renal abnormalities, need for extracorporeal membrane oxygenation, line infiltration during administration, or use of vasopressor therapy. Safety o the regimens will be assessed via the frequency of both sub-therapeutic peaks and supra-therapeutic troughs and rates of renal dysfunction development. Results/Conclusions. Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference in April 2013.

Learning Objectives:

Recognize the variations in neonatal pharmacokinetic parameters that contribute to aminoglycoside dosing regimens.

Describe the advantages and disadvantages between once a day and multiple doses per day dosing regimens in neonates.

Self Assessment Questions:

Which of the following regarding neonatal pharmacokinetic parameters is true?

A Neonates have an increased volume of distribution compared to a

B: Total body water is lower in neonates when compared to adults

C: Glomerular filtration rates are higher in neonates than adults

D: Pharmacokinetic parameters are the same in all neonates regardle

Which of the following is a disadvantage of once a day dosing of aminoglycoside?

A Convenience

B Risk of toxicity

C Risk of subtherapeutic dosing

D Increased concentration to MIC ratio

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-404 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF BLOOD PRESSURE CONTROL IN HEMORRHAGIC STROKE PATIENTS RECEIVING NICARDIPINE VERSUS OTHER AGENTS

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Background The optimal agent for acute blood pressure control after spontaneous intracerebral hemorrhage (ICH) and aneurysmal subarachnoid hemorrhage (SAH) remains unknown. The American Hear Association/American Stroke Association guidelines recommend utilizing labetalol or nicardipine as initial options following acute stroke, but do not differentiate efficacy between the two agents. Nicardipine may provide more consistent blood pressure control than labetalol, although no difference has been seen with clinical outcomes. Both nicardipine and other agents are routinely utilized at out institution, based on prescriber preference. Purpose The primary objectives of this study are to evaluate time to achieve target blood pressure and time within target range for patients managed with nicardipine as compared to alternative IV antihypertensive agents at our institution.

Methods This is a retrospective study of adult patients admitted for nontraumatic ICH and nontraumatic SAH at Beaumont Hospital-Royal Oak from January through December 2012. Patients were identified retrospectively through crossmatching of antihypertensive medications with ICD-9 codes. Groups were matched by gender, age decade, and type of bleed. Hemorrhagic stroke patients who received greater than one bolus dose of enalaprilat, esmolol, hydralazine, labetalol, or metoprolol, or a nicardipine infusion for greater than three hours were included. Patients were excluded for age less than 18 years, no study drug given, or traumatic ICH or SAH. Patients were stratified into two groups (nicardipine versus other agents) and data was collected for the first 72 hours of therapy or until therapy was discontinued. Appropriate blood pressure control was evaluated by time to achieve target blood pressure and time within target blood pressure range for patients managed with nicardipine versus alternative antihypertensive medications. Outcomes measured were Glasgow Coma Scale score, hematoma expansion, need for further operative intervention, and Modified Rankin Scale. Results/Conclusions This study is under investigation with results and conclusions to be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of acute blood pressure control in patients with hemorrhagic stroke.

Discuss the recommended guidelines for treating elevated blood pressure in hemorrhagic stroke.

Self Assessment Questions:

Which of the following is NOT a result of persistently elevated blood pressure in hemorrhagic stroke?

A Early neurological deterioration

B: Hematoma volume expansion

C: Improved clinical outcomes

D: Incidence of rebleeding

Which of the following antihypertensive agents should be avoided in hemorrhagic strokes due to the concern for increased intracranial pressure?

A Labetalol

B Nicardipine

C Sodium Nitroprusside

D Esmolol

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-406 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZATION OF ANTIBIOTIC USE IN CARDIOGENIC SHOC

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Background: Many patients with cardiogenic shock may be inappropriately prescribed antibiotics as the initial presentation may mimic septic shock. The distinction between sepsis and non-infective SIRS can have major diagnostic and therapeutic implications. Initial lower systemic vascular resistance (SVR) was shown to predict risk of developing infection among those patients included in the SHOCK trial. However, data from this trial was collected from 1993 to 1998, and approximately 40% of these patients received surgical revascularization as part of the management of their acute MI. Contemporary management of acute MI revolves almost exclusively around percutaneous revascularization. Because of this drastic advancement in the treatment of these patients, previously identified markers of infection like lower SVR may no longer be valid. To date, no studies have attempted to characterize infectious markers in patients with cardiogenic shock after contemporary management of acute MI. The purpose of this study is to improve the management of patients with cardiogenic shock following acute myocardial infarction who also present with suspected infection Methods: This is a prospective, single center, observational, nested case-control study. Patients who develop cardiogenic shock after percutaneous revascularization for an acute myocardial infarction as evidenced by ST elevation or new left bundle branch block will be screened. Inclusion criteria include: clinical criteria for cardiogenic shock with hemodynamic confirmation; absence of other causes of shock at presentation, and enrollment within 12 hours of ICU admission. Patients with cardiogenic shock following NSTEMI, mechanical complications (i.e. acute ventricular septal defect, mitral regurgitation, or wall rupture), or no pulmonary artery catheter in place will be excluded. Patient demographics, characteristics, antibiotic use, and microbiology will be analyzed with descriptive or statistical analyses as appropriate. A regression analysis of those variables with both statistical and clinical significance will be performed in an attempt to identify characteristics that might predict a subsequent diagnosis of infection.

Learning Objectives:

Recognize the challenge of identifying true infection in patients in cardiogenic shock following acute myocardial infarction.

Describe potential indicators which may suggest true infection in patients in cardiogenic shock following acute myocardial infarction.

Self Assessment Questions:

To date, what has been the only identified predictor of infection in patients in cardiogenic shock following acute myocardial infarction?

A Leukocytosis

B: Fever

C: Low heart rate

D: Low systemic vascular resistance

Although a previous study has identified a potential indicator of infection in patients in cardiogenic shock following acute myocardial infarction, why might the results of this study be questioned?

A The study suggesting the correlation was not adequately powered

B Management of acute MI has changed since the study was conduc

C Baseline characteristics of the study patients were statistically diffe

D All study patients received antibiotics

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-407 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BENCHMARKING KEY OUTCOMES IN UNIVERSITY OF CHICAGO HEART TRANSPLANT RECIPIENTS

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Purpose: The University of Chicago Medical Center (UCMC) cardiac transplant program was established in 1984 and performed its first heart transplant in 1988. Over the last five years, UCMC has performed an average of twenty-four heart transplants per year. The Scientific Registry of Transplant Recipients (SRTR) publishes center-specific patient outcomes including patient and graft survival rates, but not they do not provide detail about specific challenges a program may face. In order to provide optimal patient care and maintain appropriate treatment protocols at UCMC, it is essential to have a thorough understanding of the patient population and their outcomes under our care.□□Methods: The current study is a retrospective cohort analysis evaluating 1-year outcomes after heart transplantation at UCMC. The study will focus on five dimensions: 1) graft and patient survival, 2) immunosuppression and rejection, 3) prophylaxis and infection including cytomegalovirus, Pneumocystis jirovecii pneumonia (PJP), fungal, and ventricular assist device-related infections, 4) hematologic outcomes including blood loss or thromboembolism, and 5) metabolic outcomes including diabetes, hypertension and hyperlipidemia. Patients eighteen years old or older who received a heart transplant at UCMC between January 1, 2009 and December 31, 2011 were included. Patients who underwent multiple organ transplants and patients who did not complete their first year of post-transplant care at UCMC were excluded. The primary objective was to identify causes of graft or patient loss at one-year post-transplant. Secondary objectives were to compare our centers outcomes in each of the five dimensions with rates reported in the transplant literature. All data was analyzed with descriptive statistics.□□Results: to be presented□□Conclusion: to be presented

Learning Objectives:

Review the role of the United Network for Organ Sharing and the Scientific Registry of Transplant Recipients.

Describe UCMC program-specific outcomes after heart transplantation and compare these with rates reported in the literature.

Self Assessment Questions:

Regarding UNOS and SRTR, which of the following statements is correct?

A UNOS provides details about specific challenges that individual tra
B: SRTR coordinates the matching/distribution of donated organs
C: UNOS maintains the national organ transplant waiting list
D: SRTR maintains the national organ transplant waiting list

Of the following, which is the most common complication in the first year after heart transplantation at UCMC?

A PJP Pneumonia
B Pulmonary embolism
C Hyperacute rejection
D CMV disease

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-408 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MANAGEMENT OF CLOSTRIDIUM DIFFICILE INFECTIONS AND THE EFFECTS OF PROTOCOL REGULATED TREATMENT ON PATIENT OUTCOMES

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Purpose:□Guidelines published in 2010 by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA) provide recommendations for the treatment of Clostridium difficile infections. However, these guidelines do not address treatment with fidaxomicin, which was approved in May 2011 to treat Clostridium difficile infections. At our institution, the treatment of Clostridium difficile infections is not standardized and varies between physician groups. The objective of this study is to determine the effect on patient outcomes after the implementation of a protocol regulated Clostridium difficile treatment which incorporates the use of fidaxomicin. □□

Methods:□Prior to study implementation, the protocol was submitted and approved by the Institutional Review Board. A data surveillance system was used to identify patients who had a positive Clostridium difficile test between April 1, 2012 and September 30, 2012 for retrospective analysis. This analysis evaluated current treatment patterns and identified predictive factors that may correlate with treatment outcomes. Predictive factors included: age, renal function (serum creatinine), initial white blood cell count, concomitant antibiotic usage, and immunologic status. The primary outcomes of this study include length of stay and treatment duration. Secondary outcomes include 30 day re-admittance rates and change in the appropriateness of therapy after protocol initiation. Working in conjunction with the infectious disease physician group, a Pharmacy and Therapeutics Committee approved treatment algorithm for Clostridium difficile infections was implemented for use in all patients with Clostridium difficile infections. A prospective analysis will be conducted between December 1, 2012 and March 31, 2013 focusing on the outcomes listed for the retrospective analysis. Adherence to the treatment algorithm will be monitored and enforced by the clinical pharmacy staff. □□Results:□Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify patient specific risk factors that may increase the risk of recurrent Clostridium difficile infections.

Identify the most appropriate treatment for Clostridium difficile infections based on specific patient factors

Self Assessment Questions:

Which of the following is a risk factor for recurrent Clostridium difficile infection?

A Age > 50
B: No severe underlying medical disorder
C: Concomitant antibiotic therapy that cannot be stopped while active
D: No previous history of Clostridium difficile infection

Of the following pairs of Clostridium difficile infection severity and treatment, which is NOT correct?

A Mild/moderate – metronidazole 500mg PO TID
B Severe – vancomycin 500mg PO QID
C Severe, complicated – vancomycin 500mg PO QID + metronidazo
D High recurrence risk – fidaxomicin 200mg PO BID

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-409 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROCALCITONIN TO GUIDE DURATION OF THERAPY IN COMMUNITY ACQUIRED PNEUMONIA

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Purpose: Over the past ten years, there has been an increasing pool of evidence to support the use of procalcitonin (PCT) as a biomarker for bacterial infection. Studies have shown that when using predetermined PCT concentration cut-offs to discontinue antibiotics, antibiotic duration was shorter without an increased risk of therapeutic failure or negative outcomes. The data supporting PCT is strongest in patients with lower respiratory tract infections. The providers at Aurora St. Lukes Medical Center have been increasing their utilization of PCT throughout 2012 without any consensus on its appropriate use. The objective of this project is to develop internal consensus on the use of PCT and implement a pilot for use in patients admitted with suspected pneumonia. Methods: Approval from the Institutional Review Board was obtained prior to the initiation of this project. A literature search and evaluation was completed and a proposal and guidance document for the use of PCT in pneumonia was created. Support was obtained from core sections including Infectious Disease and Critical Care. A protocol for piloting the use of PCT in patients admitted for pneumonia was implemented and driven by pharmacists. The protocol excluded patients with conditions associated with PCT elevations not related to infection, conditions in which a low PCT did not rule out infection, and populations that have not been studied. In patients admitted for suspected pneumonia, PCT was measured at baseline and repeated on day four with some variation by clinical situation. All PCT levels were applied to an evidence based algorithm and providers were called with PCT interpretations and suggestions to discontinue antibiotics when appropriate. The pilot group will be compared to a retrospective group from the previous year. Results/Conclusions: The PCT protocol is currently in the data collection phase. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the situations where the use of procalcitonin to help guide duration of antibiotic therapy may not be appropriate.

Describe the procalcitonin algorithm and cut-off values that suggest the discontinuation of antibiotics in patients with pneumonia.

Self Assessment Questions:

Procalcitonin can be appropriately used to help guide duration of antibiotic therapy in which of the following patients?

A A patient with a newly diagnosed empyema
B: A patient currently on anti-rejection immunosuppression
C: A patient with congestive heart failure with pulmonary edema versu
D: A patient with microbiologically confirmed Mycoplasma pneumonia

A pneumonia patient with a baseline procalcitonin of 1.25 ng/mL can be considered for antibiotic discontinuation with which of the following follow up procalcitonin results?

A 0.65 ng/mL
B 0.49 ng/mL
C 0.99 ng/ mL
D 0.22 ng/mL

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-410 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF PENICILLIN ALLERGY DOCUMENTATION AND ITS EFFECTS ON PRESCRIBING

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Purpose: Approximately 10 percent of the population reports having an allergy to penicillin. Of the patients reporting an allergy, only about 10% have a true allergy. Patients with inappropriately documented penicillin allergies run the risk of receiving sub-optimal therapy, have increased risk of secondary bacterial infections and may be at increased risk for antimicrobial resistance. The objective of this study is to identify patients with penicillin allergies listed in their medical record, clarify the allergy in the chart and monitor patients antibacterial therapy. Methods: A Theradoc alert will identify patients with an allergy to penicillins. Those who are 18 and older will be interviewed by the pharmacist using a questionnaire to assess their penicillin allergy history. The allergy questionnaire will help categorize the patients reaction type into one of the following: IgE mediated reaction, non-severe drug allergy, drug intolerance or an unknown reaction. Detailed information regarding the patients allergy history will be updated in the electronic chart and the patient will be formally educated about their penicillin reaction. Following the patient interview and chart modification the pharmacist will review the patients medications. If the patient is receiving antibiotics for an infection that a penicillin or alternative beta-lactam product may be preferred to current therapy, the physician will be contacted. The charts for these patients will be reviewed to determine if antimicrobial therapy was affected by allergy clarification. Results: Results are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the difference between symptoms of a true penicillin allergy and those of intolerance.

Identify reasons why patients with a history of a penicillin allergy may be able to tolerate a penicillin when re-challenged.

Self Assessment Questions:

LW is a 71 year old female who states she took penicillin by mouth when she was 15 years old and experienced diarrhea. How would you characterize LWs reaction to penicillin?

A Severe Drug Allergy
B: Non-severe drug allergy
C: Intolerance
D: IgE mediated reaction

What percent of patients with a penicillin allergy lose their sensitivity to penicillin after 10 years?

A 5%
B 25%
C 50%
D 80%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-681 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OF PHENYLEPHRINE FOR BLOOD PRESSURE CONTROL IN ACUTE ISCHEMIC STROKE

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Purpose□The optimal management of blood pressure in patients experiencing acute ischemic neurological events remains controversial. Induced hypertension is not recommended for routine use in the most recent guidelines for early management of acute ischemic stroke. The objective of this study is to examine the effect of blood pressure control with phenylephrine on outcomes after acute ischemic stroke.□□Methods□In this single center, retrospective, cohort study, we identified patients who presented with acute ischemic stroke from the period of September, 2011 through September, 2012. Patients were excluded if they had any history of hemorrhagic stroke or any intravenous vasopressor use within the previous 3 days. Treatment groups were divided into those who received intravenous phenylephrine for at least 30 minutes within 24 hours of hospital admission and those who received standard therapy. The primary outcome of this study is the change in the NIH Stroke Score from baseline to hospital discharge. Secondary outcomes include: absolute change in NIH Stroke Score recorded after the initial treatment period, length of hospital stay, mortality rate in hospital, destination of discharge, and long-term functional outcomes as measured by the Modified Rankin Score and the Glasgow Outcome Scale. Safety endpoints include the incidence of intracerebral hemorrhage and bradycardia.□□Results□Results and conclusions to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of early blood pressure control in acute ischemic stroke.

Describe the characteristics of phenylephrine that makes it the vasopressor of choice in acute ischemic stroke.

Self Assessment Questions:

What is a potential adverse effect of phenylephrine use?

A Reflex bradycardia

B: Negative effects on cerebral vasculature

C: Increased cardiac output

D: Increased salivation

In the 2001 study by Rordorf, et al. how many phenylephrine treated patients had an improvement of 2 points or greater in NIHSS?

A 0

B 5

C 7

D 10

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-411 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE UTILIZATION OF BENZODIAZEPINES AND NON-BENZODIAZEPINES HYPNOTICS IN THE GERIATRIC POPULATION AT AN ACADEMIC MEDICAL CENTER

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The geriatric population, > 65 years of age, are at an increased risk for avoidable adverse events due to inappropriate medication prescribing. According to the American Geriatric Society, approximately 27% of adverse drug events (ADEs) in the primary care setting. Certain medications are deemed inappropriate because of their limited effectiveness and association with serious problems, including: delirium, falls, fractures and GI bleeding. According to the 2012 Beers Criteria update, benzodiazepines and non-benzodiazepine hypnotics are deemed inappropriate in older adults. The purpose of this study is to identify current prescribing practices, to provide education and develop a clinical assessment tool to identify patients at significant fall risk.□□The primary objective is to assess the utilization of benzodiazepine and non-benzodiazepine hypnotics in patients > 65 years of age. The appropriate indication for prescribing benzodiazepines include: seizure disorder, benzodiazepine withdrawal, severe generalized anxiety disorder, periprocedural anesthesia, sedation in the ICU, or end-of life care. Inappropriate prescribing would then include all other indications, including: insomnia, agitation, and delirium. The appropriate use of non-benzodiazepine hypontics is defined as starting at minimal doses. Secondary endpoints include: number of falls, completion of the Morse Scale Fall Assessment, the number of Rapid Response Treatments (RRT) / flumazenil administrations, and the indications for prescribing benzodiazepines and non-benzodiazepines. □□The study design received the approval of the Institution Review Board and is a benchmark retrospective analysis. Patients > 65 years of age who were prescribed a benzodiazepine or non-benzodiazepine hypnotic while in house during May 2012 - October 2012 will be included in the study. Data points collected will include: patient demographics, medications prescribed, fall risk, biological, and the number of RRTs called. The primary endpoint will be evaluated using descriptive statistics and the secondary endpoints will be evaluated utilizing correlation analysis.
□□
The results are in progress.

Learning Objectives:

Review the literature examining the use of potentially inappropriate medications in the elderly

Identify areas of improper use of benzodiazepine and non-benzodiapinehypnotics in a large academic medical center

Self Assessment Questions:

The improper use of medications in the elderly can lead to:

A falls

B: fractures

C: GI bleeding

D: All of the above

Benzodiazepines can be safely prescribed in the elderly population EXCEPT for:

A Benzodiazepine withdrawal

B Delirium

C Sedation in the ICU

D Seizure disorder

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-809 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF CLINICAL OUTCOMES OF TWO PHARMACY PRACTICE MODELS FOR INPATIENT VANCOMYCIN MANAGEMENT IN SPECIAL PATIENT POPULATIONS

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Purpose: National pharmacy practice model (PPM) advancements include pharmacokinetic (PK) programs. The optimal PPM for vancomycin PK management is not known. This retrospective cohort review compared two progressive PK models at an academic medical center in an effort to define the optimal PPM for PK management and to identify special patient populations in which pharmacists interventions had the greatest impact on patient outcomes. Methods: New PK services were implemented in 2 phases as part of an institutional comprehensive PPM change. Phase 1 (May 2009 to April 2010) included universal monitoring by pharmacists with recommendations made to prescribers (business hours, 7 days per week). Phase 2 (November 2010 to October 2011) expanded coverage to 24/7 and provided optional pharmacist-managed PK consults. Consults included a standardized credentialing process for pharmacists to provide comprehensive medication therapy management and progress note documentation. All adult inpatients receiving intravenous vancomycin were retrospectively reviewed. Patients who received vancomycin for peri-procedural prophylaxis were excluded. Special patient populations to be evaluated include patients with methicillin resistant Staphylococcus aureus (MRSA) bloodstream infections (BSIs), intensive care unit (ICU) patients, hematology / oncology and medicine patients. Primary endpoint is the proportion of vancomycin courses with initial therapeutic trough concentrations. Secondary endpoints include incidence of nephrotoxicity, antimicrobial utilization and clinical outcomes including mortality and length of stay. Additional endpoints will be analyzed in the MRSA BSI subgroup including duration of bacteremia, incidence of persistent bacteremia and vancomycin treatment failure. A target sample size of 250 patients will be collected and data will be analyzed using descriptive statistics, students t-test and Mann-Whitney U test. Results: to be presented Conclusion: to be presented

Learning Objectives:

List key recommendations from the Pharmacy Practice Model Initiative (PPMI)

Describe the impact of clinical pharmacokinetic services on patient outcomes

Self Assessment Questions:

Which of the following is NOT a recommendation from the Pharmacy Practice Model Initiative (PPMI)?

A Pharmacist must be allowed to document recommendations and f
B: Drug therapy management should be provided by a pharmacist for
C: Pharmacists are not essential members of health care teams.
D: Through credentialing and privileging processes, pharmacists shou

Which of the following is/are true of clinical pharmacokinetic services?

A Reduce health care cost
B Reduce mortality and length of stay
C Reduce adverse events
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-412 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A NURSING-DRIVEN POTASSIUM REPLACEMENT PROTOCOL IN A BLOOD AND MARROW TRANSPLANT UNIT

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Purpose: Maintaining potassium homeostasis is critical in decreasing cardiovascular complications for patients in the hospital. Hypokalemia and hyperkalemia are associated with an increased risk of cardiac arrhythmias and higher mortality rates in hospitalized patients. Traditionally, potassium replacement is mainly carried out through physician orders which involve complete evaluation of each individual patients clinical situation. The disadvantage of the traditional practice is that the potassium replacement is not standardized and can be very time-consuming. A nurse-driven potassium replacement protocol will be implemented in a blood and marrow transplant unit at Rush University Medical Center to improve the potassium replacement process.

Methods: After implementation of the potassium replacement protocol, a retrospective chart review at Rush University Medical Center (RUMC) will be performed to evaluate the safety and effectiveness of the protocol. Patients in the blood and marrow transplant unit who meet potassium replacement criteria from August 1st, 2012 until October 1st, 2012 will be included in the pre-protocol arm. After protocol implementation, patients who meet replacement criteria from Feb 15th, 2013 until Apr 15th, 2013 will be included in the post-protocol arm. The primary outcome of this study is to compare the number of hyperkalemia events of potassium replacement between the pre-protocol and post-protocol arms. Secondary outcomes of interest include timeliness of potassium replacement, missed replacement opportunities, number of replacement doses given, total replacement dose given, and incidence of hypokalemia following potassium replacement. A nurse/physician satisfaction survey will also be conducted before and after protocol implementation. Conclusion: Patient outcomes remain under investigation, with data collection and evaluation currently in progress.

Learning Objectives:

Discuss the importance of maintaining potassium homeostasis.

Describe the advantage of a nurse-driven potassium replacement protocol.

Self Assessment Questions:

In this study, what serum potassium level is used to define hypokalemia and needs potassium replacement?

A < 2 mmol/L
B: < 3 mmol/L
C: < 4 mmol/L
D: < 4.5 mmol/L

What is the advantage of a nurse-driven potassium replacement protocc based on published literature?

A Complete evaluation of clinical situation
B Timeliness of administration
C Patient satisfaction
D Cost saving

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-413 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ERTAPENEM DEVELOPMENT OF RESISTANCE: DOES ERTAPENEM CAUSE IN VITRO RESISTANCE TO ITSELF OR OTHER CARBAPENEMS?

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Background: Ertapenem is a broad spectrum antibiotic with activity for multidrug resistant organisms, such as Serratia, Enterobacter, and extended spectrum beta lactamases. However, it has weak activity for Pseudomonas aeruginosa and Acinetobacter. Ertapenems greatest appeal is its once daily dose and its ability to be used in patients with penicillin and sulfa allergies. Ertapenems use has become widespread based on all these benefits. However, this use may be contributing to the increasing resistance rates with Acinetobacter baumannii and Pseudomonas aeruginosa. In addition, Klebsiella, Enterobacter, and Serratia may show resistance against all antibiotics except carbapenems. Therefore, if resistance develops with carbapenems, pan resistance may occur. Purpose: To determine whether ertapenem drives resistance to itself and/or creates cross resistance to other carbapenems by examining in vitro minimum inhibitory concentrations in six particular isolates: Klebsiella pneumoniae, Pseudomonas aeruginosa, Escherichia coli, Serratia marcescens, Acinetobacter baumanii, and Enterobacter spp. Methods: Twelve patient isolates from any source mentioned above will be studied. The isolates will be inoculated by a multipass procedure with doubling dilutions of ertapenem. After incubation for 24 hours, a sample of the organism from the highest ertapenem concentration that permits growth will be taken and continuously re-inoculated at doubling dilutions of ertapenem for 15 days. Ertapenem epsilometer-tests (E-test) will be performed daily to assess trends. In addition, a sample from the highest concentration that allows growth will be plated on days zero, five, ten, and fifteen, to test meropenem, imipenem, and doripenem minimum inhibitory concentrations (MIC) with E-test methods. Preliminary results: The eratapenem MIC for 50% of the isolates increased over the first ten days. The average ertapenem MIC of 2.28 on day zero increased to 4 or day ten. Final results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify ertapenem spectrum of activity.

Explain the benefits of ertapenem versus meropenem, imipenem, and doripenem.

Self Assessment Questions:

All of the following organisms are covered by the use of ertapenem EXCEPT?

A Pseudomonas aeruginosa
B: Klebsiella pneumoniae
C: Serratia marcescens
D: Enterobacter spp

Ertapenem is unique compared to the other carbapenems because it is/has?

A Less adverse drug reactions
B Dosed once daily
C Different pharmacokinetic parameters
D Less expensive

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-682 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERPROFESSIONAL EDUCATION AND PRACTICE: OUTCOMES OF PHYSICIAN AND PHARMACIST LEAD ROUNDS FOR GENERAL MEDICINE PATIENTS

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Purpose: Patients health needs are becoming increasingly complex requiring a multidisciplinary approach to deliver patient care. This approach has been shown to decrease hospital length of stay (LOS) and potentially cost of care. The addition of a clinical pharmacist to a patient care team has shown to significantly decrease hospital LOS and readmission rates. The aim of this comparison study is to assess various health providers attitudes and perceptions toward interprofessional education and collaboration. Methods: Healthcare providers, including medical/pharmacy students and residents, clinical pharmacist specialists and attending physicians, will take an Interprofessional Education and Collaboration Perception Scale survey within the first 48 hours of starting and at the completion of a 4 week block in the internal medicine service. This survey contains 13 questions and will assess the health providers perception on various elements of interprofessional education and collaboration. Surveys from three internal medicine services, an academic physician/pharmacist (intervention group), academic physician, and hospitalist service (control group), will be collected and analyzed using descriptive statistics. The primary objective will compare health providers attitudes and perception towards interprofessional collaboration. Throughout the 6 month study period, secondary outcomes will evaluate LOS, readmission rates and percentage of time patients with a diagnosis of diabetes maintain glycemic control across each service. Results: To date, approximately 30 healthcare providers have completed the pre and post survey. Mean hospital length of stay (days) was 3.1 for the academic physician/pharmacist, 2.9 for the academic physician and 3.3 for the hospitalist service. In the academic physician/pharmacist and the academic physician group 72 percent of patients maintained glycemic control compared to 82 percent in the hospitalist group.

Conclusion: These results indicate preliminary data and conclusions will be discussed at the Great Lakes Residency Conference in April 2013.

Learning Objectives:

Identify health providers attitudes and perceptions towards interprofessional collaboration between the academic physician/pharmacist, academic physician, and hospitalist led patient care teams

Discuss the effects of multidisciplinary patient care rounds and its impact on patient outcomes

Self Assessment Questions:

Those occasions when members (or students) of two or more professions learn with, from and about one another to improve collaboration and quality of care is referred to as?

A Interprofessional collaboration
B: Interprofessional care
C: Interprofessional education
D: All of the above

Which of the following is false regarding measurement tools for assessing interprofessional education and collaboration?

A The Interdisciplinary Education Perception Scale (IEPS) assesses
B The Readiness for Interprofessional Learning Scale (RIPLS) asses
C The IEPS and RIPLS measurement tools evaluate four main facto
D Both the IEPS and RIPLS were not developed for utilization in the

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-683 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF BIVALIRUDIN FOR PERCUTANEOUS CORONARY INTERVENTION FOLLOWING STEMI

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Purpose: Complications of percutaneous coronary intervention (PCI) include bleeding and reinfarction after stent placement. The American College of Cardiology and American Heart Association guidelines for ST segment myocardial infarction (STEMI) state that bivalirudin, a direct thrombin inhibitor, may be used for PCI as an alternative to the combination of the glycoprotein IIb/IIIa inhibitor eptifibatide plus heparin. The emergency department STEMI protocol at Franciscan St. Elizabeth Health was amended to provide a bivalirudin bolus then continuous infusion before PCI. Our aim is to determine whether bivalirudin is associated with decreased bleeding rates and rates of rethrombosis when compared with eptifibatide, the agent of choice on the previous protocol, for patients who undergo coronary angiography after STEMI.□□Methods: This study is an IRB-approved retrospective chart review of patients who received either bivalirudin or eptifibatide in the cardiac catheterization laboratory between August 2011 and February 2013 for the diagnosis of STEMI. Patients will be identified using either dispensing cabinet records from the unit in the catheterization laboratory or pharmacy software records. Patient demographics (age, height, weight, and serum creatinine) will be collected. Primary outcome measures will include bleeding rates and rates of rethrombosis at 30 days. Secondary outcomes measures will include Thrombosis in Myocardial Infarction (TIMI) flow rates at the beginning and end of each procedure and the need for transfusion or blood products. Doses administered will be collected, and appropriateness of dosing for weight and renal function will be evaluated. Use of heparin and anti-platelet agents such as aspirin, clopidogrel, and prasugrel will be recorded. A Franciscan Alliance-affiliated statistician will assist with the evaluation of results. □□Results: Patient identification and data collection are ongoing. Further data collection and analysis will be completed before conclusions are drawn. □□Conclusions: Final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the difference in mechanism of action between bivalirudin and eptifibatide.

Review the results of the HORIZONS-AMI trial and its impact on choice of anticoagulant or antiplatelet agents used for PCI following STEMI.

Self Assessment Questions:

What is the mechanism of action of bivalirudin?

A Glycoprotein IIb/IIIa inhibitor
B: Direct thrombin inhibitor
C: Factor Xa inhibitor
D: Antiplatelet agent

2.)The HORIZONS-AMI trial showed which of the following for bivalirudin as compared to eptifibatide plus heparin?

A Increased bleeding rates
B Decreased bleeding rates
C Equal bleeding rates
D Increased rates of total ADRs

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-414 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPLICATION OF A CLINICAL TRIALS EFFORT TRACKING TOOL TO WORKLOAD MANAGEMENT IN AN ACADEMIC INVESTIGATIONAL DRUG SERVICE

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Purpose: □Estimating staffing requirements in investigational drug services (IDS) is difficult due to the complex nature of study efforts and complicated by a lack of validated tools for quantifying personnel workload. The University of Michigan IDS has adapted and implemented the Research Effort Tracking Tool (RETA), a web-based application designed by the University of Michigan Comprehensive Cancer Center (UMCCC) Clinical Trials Office (CTO) for effort tracking o regulatory and data management aspects of clinical trials management. Results will be used to justify personnel and determine appropriate fees for service. □□Methods: □Role-based task lists specific to IDS activities were developed through focus groups with IDS pharmacists and technicians. Staff began pilot phase documentation in the RETA system in December 2012. Revisions of the task list and documentatior requirements are ongoing periodically. Once the pilot has been completed, data will be analyzed and workload costs compared to the existing IDS fee schedule to evaluate whether current fees are aligned with actual effort. Employee satisfaction and attitudes regarding RETA documentation requirements were assessed using a Qualtrics survey prior to implementation; a follow-up survey will be issued after the pilot phase is complete. This research is considered exempt from Institutional Review Board review.□□Results: □Survey results prior to RETA implementation indicated that staff were concerned regarding time required to log activities (cited by 5 of 7 [71%] staff members in the free text answer to the question, "What reservations or concerns do you have about using the RETA system?"). Average RETA log time per person during the first month of implementation was 15.6 9.5 minutes daily; this was more than the expected 5-10 minutes and prompted revision and simplification of the task list. Final workload data analysis and fee calculations are pending completion of the pilot phase.

Learning Objectives:

Describe an "ideal" workload tracking application.

Identify study determinants that may impact clinical trials staff efforts.

Self Assessment Questions:

Which of the following characteristics are desirable in a workload tracking application?

A Time consuming
B: Widely applicable to different roles and trial activities
C: High maintenance
D: Open to variable interpretation

Which of the following study determinants may impact clinical trials staff efforts

A Study volume and accrual rate
B Study enrollment status
C Study sponsor type
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-684 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A PHARMACIST-LED DIABETES MANAGEMENT PROGRAM AT A LOCAL EMPLOYER IN RURAL KENTUCKY

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Purpose: Eight percent of Americans and ten percent of Kentuckians are estimated to have diabetes. The regions serviced by St. Claire Regional Medical Center have diabetes rates of eleven percent or higher. Diabetes increases the risk of heart disease, stroke, nervous system damage and periodontal disease. Diabetes also increases healthcare related expenditures. Having diabetic employees increases healthcare costs to employers, not only through insurance costs but also increased absenteeism and decreased productivity. Although diabetes is a major health problem there is a lack of local wellness programs to help patients manage their disease. Multiple studies have shown success with pharmacist-led diabetes management. The primary objective of this project is to establish employer-funded pharmacist-led diabetes management program. Secondary goals are to help patients achieve better glucose control; optimize medication therapy; improve overall patient satisfaction with diabetes care; and to decrease employee absenteeism due to diabetic associations. Methods: This project was deemed exempt from Institutional Review Board oversight. To implement the program a business proposal targeting the benefits of pharmacist-led diabetes management to a local business was presented to a local employer. The proposal explained the benefits of increased productivity and decreased absenteeism due to better diabetes management via onsite appointments. Once implemented, the program will assess control of blood glucose, blood pressure, weight and lipid values, comparing levels at baseline and over time. A clinical pharmacist will assess each patient medication regimen and make recommendations based on the 2012 American Diabetes Association Guidelines to the patients healthcare provider. Implementation of these recommendations will be at the providers discretion. The pharmacist will also provide personalized education and counseling to patients.

Results and Conclusion: Results are pending. Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the benefits of pharmacist-led diabetes management in rural areas.

Identify the barriers towards implementation of a pharmacist-led diabetes management program in rural areas.

Self Assessment Questions:

Which of the following is a potential barrier towards implementation of a rural pharmacist-led diabetes management program?

A The general public's lack of trust in pharmacists.
B: Pharmacists' lack of skill in disease state management.
C: Lack of time for the pharmacist to provide service.
D: Abundance of providers offering similar services.

What are some results from pharmacist-led diabetes management in the past?

A Decreased A1c values.
B Decreased satisfaction with diabetes related healthcare.
C Increased direct medical cost related to diabetes.
D Increased fasting blood glucose levels.

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-685 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF PEDIATRIC DOSING FUNCTIONS IN THE ELECTRONIC HEALTH RECORD

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Purpose: Pediatric patients are up to three times more likely to experience an adverse drug event. Therefore, NorthShore University HealthSystem (NorthShore) is implementing pediatric dosing functions in the electronic health record (EHR) to reduce the risk of medication errors. The main objectives are to apply appropriate dose-rounding parameters to commonly prescribed intravenous (IV) and oral liquid medications, eliminate non-metric units of measure, and set maximum dose alerts on selected medications. Methods: A report of pediatric medications prescribed at NorthShore between January and June 2012 was used to identify frequently prescribed IV medications and oral liquids. The list was narrowed to include drugs that have a high risk of adverse events and/or frequently prescribed outpatient medications. A literature review was performed to determine pediatric dosing ranges, maximum pediatric doses, and potential dose-rounding strategies. Data collection included current dose-rounding in the EHR, typical dosing ranges, maximum pediatric doses, and recommended dose-rounding tolerances. Dose-rounding parameters for oral liquids were modified to provide reasonable doses for caregivers to measure (e.g., the nearest 0.2 or 0.5 mL). In order to reduce errors arising from the confusion with teaspoons, tablespoons, and other non-metric units, the EHR was modified to only allow metric dosing units. Maximum doses for certain medications were set to not exceed a normal adult dose. In addition, maximum doses were assigned to IV syringes to prevent children from receiving IV bolus doses that exceed what is safe and recommended. Data will be collected on the number of times the maximum dose is exceeded prior to and after implementation of these changes. The recommendations were presented to and approved by the Department of Pediatrics prior to implementation. Results/Conclusion: Data collection is ongoing and results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss pediatric-specific characteristics that put this population at increased risk of adverse drug events

Identify potential sources of medication errors in pediatric patients that arise from the prescribing process and/or electronic prescribing and how these errors can be minimized

Self Assessment Questions:

Compared to adults, which of the following characteristics of pediatrics put them at increased risk for adverse drug events?

A Poorer absorption of medications from various administration sites
B: Greater variation in body weights and sizes
C: Lack of drug-metabolizing enzymes
D: Increased volume of distribution of lipid-soluble drugs

Which of the following are potential sources of medication errors in pediatrics that arise from the prescribing process and/or electronic prescribing?

A Overly precise doses provided by the electronic prescribing system
B The use of metric units in the prescribing process
C Electronic prescribing systems often set the maximum pediatric do
D Dosing algorithms are often based on adult guideline dosing recon

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-810 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF SECURE MESSAGING AS A TOOL IN THE DELIVERY OF ANTICOAGULATION CARE

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Purpose: My HealtheVet is a patient accessible web portal which was introduced within the Veterans Health Administration (VHA) beginning in 2007. This allows patients to access their own medical records including medication refill information, demographics, appointment information, and co-pay status. In more recent years, secure messaging was added which allows for web-based communication between patients and their providers. In October 2012, secure messaging was initiated as a means of providing patient care within the William S. Middleton VA anticoagulation clinic. The purpose of this evaluation is to determine the demographics of patients enrolled in secure messaging for anticoagulation management, qualify how secure messaging is used in anticoagulation management, and measure the satisfaction of providers and patients utilizing the secure messaging system for anticoagulation management.□□Methods: Patients will be identified from a generated report that will include all patients enrolled in the secure messaging anticoagulation service between October 1, 2012 and March 1, 2013. All patients will be sent an invitational letter and program information form explaining the program evaluation via the secure messaging portal. Patients willing to participate in the evaluation will be contacted via telephone to complete the satisfaction survey. Providers and program service assistants will also complete satisfaction surveys. Data collected from the retrospective review will include age, gender, length of time on current dose regimen, total time on warfarin, previous use of secure messaging for other services, distance of travel to the William S. Middleton VA, and number of patients who returned to traditional anticoagulation clinic. Data collected from review of secure messaging history will include the number and topic of anticoagulation messages sent in secure messaging. □□Results and Conclusions: To be presented

Learning Objectives:

Define the VA secure messaging system

Identify potential benefits of using secure messaging for anticoagulation management

Self Assessment Questions:

Which of the following is true of the VA secure messaging system?

A Secure messaging is one of many approved forms of electronic co
B: Secure messaging participation is required to receive care at the V
C: Secure messaging is a web-based message system that allows V
D: Secure messaging may be used to communicate urgent and emer

According to a previous systematic review of secure messaging use in the primary care setting, which of the following was a noted outcome?

A Patient satisfaction was increased
B Patient satisfaction was decreased
C Provider satisfaction was increased
D Provider satisfaction was decreased

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-415 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INSULIN ADVERSE DRUG EVENT REDUCTION- COMMUNITY MEMORIAL HOSPITAL (CMH) IMPROVEMENT PROJECT

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Purpose:□Hypoglycemia is shown to be associated with increased mortality and length of stay in diabetic patients who are hospitalized. Many current hospital policies and practices seek to achieve tight blood glucose control in diabetic patients during their hospital stay through aggressive use of insulin. However, evidence shows that hospitalized patients with hyperglycemia do not benefit from this highly aggressive blood glucose control due to hypoglycemic risk and complications. Additionally, hyperglycemia can complicate patient outcomes. Studies show that elevated blood glucose levels are associated with adverse inpatient outcomes. For hospitalized patients with non-critical illness, the American College of Endocrinology and American Diabetes Association guidelines recommend achieving pre-meal blood glucose levels of <140 mg/dL and random levels <180 mg/dL. Blood glucose levels should also be kept >70 mg/dL.□The purpose of the study is to assess pharmacist involvement in the insulin medication history process Inpatient blood glucose data will be collected before and after implementation of pharmacist conducted medication histories.□□Methods:□The initial phase of the study will be a retrospective analysis of inpatient blood glucose measurements of patients admitted to the Medical Unit of Community Memorial Hospital between 1 August 2012 and 31 October 2012. Included patients will be those with insulin on their medication history and patients who had insulin ordered during their hospital stay. □The second phase of the study will be a comparison of blood glucose measurements after implementation of pharmacist performed medication histories. Patients studied will those that meet the same inclusion criteria over a comparable time period.□□Results:□The study is currently ongoing and results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recall blood glucose goal ranges for inpatients with non-critical illness.

Explain that a pharmacist taking insulin medication histories is a strategy to help improve inpatient blood glucose measurements.

Self Assessment Questions:

What is the recommended maximum pre-meal blood glucose for an inpatient with non-critical illness?

A 110 mg/dL
B: 120 mg/dL
C: 140 mg/dL
D: 180 mg/dL

How can a pharmacist, acting within the usual duties of the profession, can help keep patient's glucose levels with goal?

A Take over the role of prescribing insulin
B Conduct patient medication histories relating to insulin
C Inject patients with insulin themselves
D Take over the role of prescribing oral anti-hyperglycemic agents

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-811 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT, IMPLEMENTATION, AND ASSESSMENT OF CLINICAL DECISION SUPPORT TOOLS FOR THE DIAGNOSIS AND TREATMENT OF SKIN AND SKIN STRUCTURE INFECTIONS

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Purpose: Skin and skin structure infections (SSTIs) are among the most common infections in hospitalized and non-hospitalized patients. SSTIs lead to significant morbidity and mortality and many opportunities exist to optimize healthcare resource utilization. Previous studies have examined the influence of guideline-based care and demonstrated improvements in patient care. Methods: A clinical practice guideline concerning diagnosis and treatment of SSTIs was developed and implemented. Following implementation, a retrospective pre-post chart review evaluating adherence to the guideline, antimicrobial utilization, and patient outcomes was conducted. Patients with a discharge diagnosis of SSTI (ICD-9 codes 608-686) from August 1, 2012 to Augus 14, 2013 will be included. The primary outcomes are adherence to the clinical practice guideline, computerized physician order entry order set utilization, and use of daily monitoring checklist by pharmacists. Secondary outcomes include duration of antimicrobial therapy, use of broad-spectrum gram-negative and anaerobic antimicrobials, frequency of de-escalation, rate of step-down oral therapy, clinical failure, duration of hospital stay, and cost of treatment. Results/Conclusions: The guideline was developed through literature review and best practices determined by a panel of infectious disease experts. Consensus building was achieved through committee participation and email feedback. The guideline promotes non-pharmacologic interventions, guides empiric therapy selection, facilitates antibiotic de-escalation, and encourages parenteral to enteral transition. It includes methicillin-resistant Staphylococcus aureus, gram-negative, and anaerobic organism risk stratification tools and a daily monitoring checklist for pharmacists. A computerized physician order entry order set has been designed. Physicians were educated by physician champions and pharmacists were educated with presentations at pharmacist team meetings. The guideline was distributed via electronic mail and institutional website. Healthcare resource utilization data collection is ongoing and results will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify criteria that should be assessed in order to determine appropriate initial antibiotic treatment for a patient with a skin and skin structure infection.

Describe monitoring parameters for determining whether a patient receiving treatment for a skin and skin structure infection is a candidate for transition from intravenous to enteral therapy or de-escalation from broad-spectrum to narrow-spectrum antimicrobial therapy.

Self Assessment Questions:

Which of the following statements is correct regarding selection of appropriate initial antimicrobial therapy for a patient with a skin and skin structure infection?

A Patient-specific risk factors for methicillin-resistant Staphylococcus
B: Commonly, antibiotics can be selected based on previous culture
C: Type of skin and skin structure infection does not need to be cons
D: All hospitalized patients should receive the same antimicrobial cov

Which of the following monitoring parameters indicate that a patient receiving treatment with antimicrobials for a skin and skin structure infection for 48-72 hours is a candidate for transition from

A Cellulitis lesions have not stopped spreading
B The patient's fever is worsening
C The patient is afebrile, tolerating oral medications, and infection sit
D The patient remains NPO

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-417 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF THE EFFICACY AND SAFETY OF U-500 INSULIN IN PATIENTS TRANSITIONED FROM CONVENTIONAL INSULIN THERAPY

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Purpose: The purpose of this retrospective chart review is to assess the efficacy and safety of U-500 insulin in patients transitioned from conventional insulin therapy. Method: A retrospective chart review was performed and clinical data were obtained using the computerized patient record system (CPRS). The pharmacy prescription processing system was utilized to generate a list of patients who have had a prescription for U-500 insulin at the William S. Middleton Memorial Veterans Hospital through September 2012. Inclusion criteria included a diagnosis of diabetes mellitus and a prescription for U-500 insulin. Exclusion criteria included less than three months duration of U-500 insulin therapy. Chart reviews were conducted for 130 patients for up to two years prior and five years after transition to U-500 insulin. The primary outcome was change in A1c after transition from conventional insulin therapy to U-500 insulin. Secondary outcomes included change i total daily insulin dose, number of insulin injections, frequency of hypoglycemic episodes, and body weight. Results/Conclusion: The results and conclusion are pending.

Learning Objectives:

Describe the potential benefits and risks of transitioning from conventional insulin therapy to U-500 regular insulin.

Identify factors that would make a patient a good candidate for transition from conventional insulin therapy to U-500 regular insulin.

Self Assessment Questions:

A potential benefit of transitioning from conventional insulin therapy to U 500 regular insulin is:

A Improved glycemic control
B: Weight loss
C: Decreased need for follow up
D: Decreased frequency of hypoglycemic episodes

A factor that may make a patient a good candidate for transition to U-500 regular insulin from conventional insulin therapy includes:

A Prior use of insulin glargine
B Daily insulin dose greater than 200 units
C Frequent hypoglycemic episodes
D Poor adherence to conventional insulin therapy

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-416 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATION USAGE EVALUATION OF GASTROINTESTINAL PROPHYLAXIS IN A COMMUNITY HOSPITAL SETTING AND AN INITIATIVE FOR REDUCING INAPPROPRIATE USE

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Purpose: Gastrointestinal stress ulcer prophylaxis (SUP) is recommended in intensive care unit (ICU) patients with defined risk factors. However, SUP is often used in patients without appropriate indications. Use of proton pump inhibitors (PPIs) has increasingly been associated with Clostridium difficile infections, hip and vertebral fractures, hospital-acquired pneumonia, community acquired pneumonia and hypomagnesaemia. The purpose of this study is to review the use o SUP on non-ICU floors and to evaluate whether a pharmacy-driven initiative can prevent inappropriate use of SUP.□Methods: The hospitals electronic medical record was accessed to identify adult patients who received acid suppression therapy during their hospital stay. Oral pantoprazole was identified as the most commonly used agent for acid suppression therapy. Next, a retrospective chart review was performed to determine the indication for initiation of oral pantoprazole. Inappropriate use was defined as therapy started for prophylaxis without appropriate indications, as defined by the American Society of Health-System Pharmacists' Therapeutic Guidelines on Stress Ulcer Prophylaxis. Data gathered included the patients name, registration number, age, sex, admission and discharge date, indication for pantoprazole, ordering healthcare provider and whether the order was written or electronic. Modifications to oral pantoprazoles order entry process will be added in February 2013. These modifications will be used to determine whether creating a pathway in the computerized physician order entry (CPOE) system reduces inappropriate prescribing. The modifications list the appropriate indications for SUP and prompt the healthcare provider to select an appropriate indication. The patient charts will be examined in the same manner as the retrospective chart review. The number of electronic orders entered for oral pantoprazole with an indication for SUP will be compared before and after CPOE changes.□Results/Conclusions: Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the prevalence of oral pantoprazole use for SUP on non- ICU floors in a community hospital

Identify if having healthcare providers choose an appropriate indication for SUP during CPOE reduces inappropriate prescribing for SUP, which can put patients at increased risk for side effects

Self Assessment Questions:

According to the American Society of Health-System Pharmacists' Therapeutic Guidelines on Stress Ulcer Prophylaxis, which of the following is an appropriate indication?

A ICU patient who was just intubated and put on mechanical ventilat
B: ICU patient with inhaled corticosteroid treatments
C: ICU patient with sepsis and an ICU stay of 14 days
D: ICU patient with a history of GI bleed 5 years ago

PPI use has been implicated as the cause for

A Osteomyelitis
B Clostridium difficile infections
C Hypermagnesemia
D Hypercalcemia

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-418 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ACCURACY OF ADMISSION MEDICATION HISTORY FOLLOWING IMPLEMENTATION OF A STANDARDIZED NURSING PROCESS IN THE EMERGENCY DEPARTMENT

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Purpose:□Inaccurate medication histories at the time of admission can result in hospital prescribing errors and compromise patient safety. Of the total admissions for the first half of 2011, 74% were admitted through our institutions emergency department (ED). Additionally, one out of four reported medication errors were attributed to an incorrect medication history in 2012. Currently, there is no standardized nursing process to obtain medication histories at our institution. The objective of this study is to implement a standard method for nursing to obtain and transcribe medication histories into the institutions electronic medical record (EMR) when patients are admitted through the ED.□□Methods:□ED nursing staff will attend a seminar designed to standardize how medication histories are obtained. The impact of standardization will be evaluated by assessing accuracy of medication histories in the EMR pre and post implementation. This will be accomplished by a pharmacist performing a second medication history. The primary outcome of this study is comparing the number of discrepancies on medication histories pre and post medication history standardization. The following data will be collected: age, gender, number of medications, residence, admission day and time, primary diagnosis, length of stay, admission unit, and medication history source. Patients are included if they are admitted through the ED, had at least one home medication, and had a hospital stay for greater than 24 hours. Exclusion criteria include hospice patients, patients included on the pre-teaching study arm, or patients whose medication history was initially performed by a pharmacist. Secondary outcomes include identifying the total number of errors pre and post standardization, categorizing errors utilizing the Institute for Safe Medication Practices (ISMP) medication index, identifying medications prone to discrepancy, and retention of nursing staff standardization practices.
□□
Results:□Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State the impact incomplete medication histories upon hospital admission have on medication errors.

Describe why accurate medication histories at hospital admission are an important element of medication safety.

Self Assessment Questions:

Which of the following is a true statement about medication histories?

A They do not reveal that an adverse drug event was the basis of a c
B: They are not a valuable source of information and are not needed
C: Inaccuracies may lead to incorrect drug therapies following hospita
D: Electronic medical records detect the majority of medication errors

Inaccurate or incomplete medication histories at admission can result in up to _____of all hospital prescribing errors.

A 27%
B 52%
C 15%
D 7%

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-812 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MEDICATION ORDERS IN THE EMERGENCY MEDICINE

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Purpose: The role and need of a dedicated emergency department (ED) pharmacist has been established in hospitals nationwide to provide clinical services and review medication orders before administration. The ED is a high risk medication error environment warranting a pharmacists presence for medication reviews, consults, preparations, administration, and calculations. Columbus Regional Hospital (CRH) transitioned to a Computerized Physician Order Entry (CPOE) system in June 2012. Medication errors were expected due to limited training, time, and unfamiliarity with CPOE. The purpose of this study is to evaluate medication orders in the ED shortly after implementing CPOE and once again after system experience to determine if a clinical pharmacist is truly needed to improve medication errors.□□Methods: Part one of data collection consisted of a retrospective chart review between September 3-13, 2012. A total of 803 admissions were reviewed to collect patient information such as age, allergies, height, weight, reason for visit, medications ordered and prescribed, duration of stay, pertinent labs, and length of stay. Post data collection, all aspects of medications and dosages were reviewed. All medications administered and ordered for discharge were evaluated for appropriateness pertaining to the patients allergies, disease state, renal function, dose, and indication. Part two of the study consisted of a retrospective chart review between February 1-10, 2013 using data collection sheets consisting of the same information in part one with additional prescriber identification.□□Results and Conclusions: Results and conclusion will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe reasons why emergency departments are considered a high risk environment.

Identify potential areas for pharmacy clinical interventions in the emergency department.

Self Assessment Questions:

Which of the following create a high risk environment in the emergency department?

A Lack of patients

B: Patient variability

C: Nursing shift change

D: Limited formulary selection

Areas identified for possible pharmacists intervention were:

A Pediatrics, infectious disease, and pain management

B Pediatrics, migraine treatment, and dental pain

C Opioid withdrawal, infectious disease, and syncope

D Bleeding, headache, and chest pain

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-686 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIPSYCHOTIC USE IN CHILDREN WITHIN INDIANA MEDICAID

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Background: Antipsychotic medications were originally developed to treat schizophrenia and bipolar disorder in adults. In the past several years, the Food and Drug Administration (FDA) has broadened their approval of some antipsychotics to include pediatric patients for selected indications. As a result, antipsychotics are being prescribed to children at an increasing rate for both approved and unapproved indications. Despite FDA-approval for use in pediatric patients, significant concerns still exist regarding the use of multiple antipsychotics simultaneously and the potential for serious short and long term adverse effects.
□□

Objectives: The purpose of this project is to identify current prescribing practices by analyzing prescription claims data taken from the Indiana Medicaid database. With an increased understanding of prescribing practices, suitable measures to curb inappropriate use and enforce appropriate monitoring parameters will be recommended to the Indiana Medicaid program.□□Methods: Children less than 18 years of age, who were prescribed an antipsychotic medication between January 1, 2011 and December 31, 2011, were identified using the Indiana Medicaid claims database. Data collected included the total claim counts, unique claim counts, and total expenditures. The collected data was also further broken down by age group and FDA-approval.□□Results: A wide variety of medications and dosage forms were prescribed to children including tablets and capsules, orally disintegrating tablets, solutions, injections, and depots. Of all claims for antipsychotics, 18.2% of total claims, 19.5% of unique claims, and 24.5% of total expenditures for children were not FDA-approved. Antipsychotics prescribed for non-approved age groups in the pediatric population cost Indiana Medicaid approximately $8.5 million in 2011. □□Conclusions: Based on the significant percentage of claims that are not FDA-approved, the results reinforce the need to focus on children and antipsychotic prescribing practices. Further studies need to analyze specific diagnoses, long-term safety, medication possession ratios, and persistence of use.

Learning Objectives:

Review the current literature on prescribing trends and use of antipsychotic medications in the pediatric population

Explain the purpose of evaluating antipsychotic use in children within Indiana Medicaid

Self Assessment Questions:

What reasons for use of antipsychotics in the pediatric population have been documented in medical claims database research?

A Schizophrenia

B: Attention-deficit hyperactivity disorder

C: Bipolar disorder

D: All of the above

Why is it important to evaluate antipsychotic use in children?

A Curb inappropriate usage

B Encourage the use of long-acting injectables

C Enforce appropriate monitoring parameters

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-813 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST PRODUCTIVITY INSTRUMENT ACROSS A COMMUNITY HEALTH SYSTEM

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Purpose: Pharmacy managers are increasingly pressured to balance cost reduction with maintenance of quality patient care. Although the primary source of expenditures in hospital pharmacy are in purchasing medications, managing employee capital is becoming a more common method of addressing costs. Specifically, there is growing demand for managers to measure and improve productivity of staff pharmacists. Because pharmacists responsibilities vary, there are no universally accepted instruments for measuring pharmacist productivity. Further, there is no comprehensive and objective measure of pharmacis productivity currently employed at NorthShore University HealthSystem (NorthShore). The purpose of the proposed project is to develop, implement, and assess an instrument that can be used to measure the productivity of pharmacists employed in the inpatient pharmacies at NorthShore. The instrument will be designed to be used by pharmacy managers for maximizing use of pharmacists strengths and identifying areas for improvement. Methods: An instrument to measure pharmacist productivity will be designed with aid from content experts including pharmacy managers and administrators to maximize face validity. A list of pharmacists work activities will be compiled, and each activity will be investigated for operationalization and data collection from the electronic health record, payroll, individual pharmacists, and other sources. After data sources have been identified, the content experts will be consulted for the design of an output format that would allow for regular assessment of pharmacists long-term productivity in different pharmacist activities. The instrument will be implemented and, after implementation, pharmacy managers will be surveyed with a questionnaire designed using Rogers' Diffusion of Innovations Theory. This is a process and employee management project, and it will be exempt from review by the Institutional Review Board.

Results/Conclusion: Results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the rationale behind utilizing productivity metrics in hospital pharmacy.

Identify challenges to designing and implementing pharmacist productivity metrics.

Self Assessment Questions:

1.Which of the following is a reason for implementing productivity metrics for pharmacists?

A Employee performance reviews

B: Matching pharmacists' strengths with their positions

C: Identifying areas for improvement

D: All of the above

Which of the following is the primary challenge for designing productivity metrics for pharmacists?

A 'Pushback' from staff

B Variability in services and roles of pharmacists

C Garnering support from administration

D Incorporating data from multiple sources into one report

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-687 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A DIABETES INTERVENTION TOOL ON THE FREQUENCY OF RECOMMENDATIONS MADE BY PHARMACISTS DURING A COMPREHENSIVE MEDICATION REVIEW

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Purpose: Pharmacist-led Medication Therapy Management (MTM) services within community pharmacies offer additional opportunities for patients with diabetes to manage their condition. Lack of standardized documentation forms and different payer billing requirements are two major barriers to providing MTM in this setting. The primary objectives of this study are to assess the impact of a diabetes intervention tool on the frequency of diabetes recommendations made by pharmacists and to measure the change from baseline in documentation on the comprehensive medication review (CMR) form after implementation of the tool. A secondary objective is to assess pharmacists satisfaction with the intervention tool. Methods: Fourteen pharmacists within a large community pharmacy market who have been in their current role since January 2012 were selected to participate. As part of the pre-implementation phase, each pharmacist received training on use of the intervention tool via a webmeeting. A standardized data collection tool was implemented to record CMR recommendations documented at baseline and during the 3-month study period. A follow-up survey will be administered to pharmacists to assess their satisfaction with the tool. A paired t-test will be used to compare baseline and post-implementation documentation frequency and number of recommendations. Descriptive statistics will be used to evaluate pharmacists satisfaction with the diabetes intervention tool. Results/Conclusions: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Describe the prevalence of diabetes and the need for medication therapy management services.

Recognize common barriers cited when providing medication therapy management within community pharmacies.

Self Assessment Questions:

How many patients in the U.S currently have diabetes - both diagnosed and undiagnosed?

A 18 million

B: 20 million

C: 22 million

D: 25 million

Which of the following are common barriers cited when providing medication therapy management services within community pharmacies

A Billing process is confusing

B Lack of standardization

C Service takes too long

D Both A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-688 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST-LED POST-DISCHARGE TELEPHONE INTERVENTION ON HEART FAILURE READMISSIONS

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Purpose: There is discontinuity during transition of care for acute decompensated heart failure(ADHF) patients despite the high risk for hospital readmissions. These patients benefit from timely follow up with a healthcare provider after hospital discharge. However, there are limited studies evaluating prompt follow up by pharmacists and efficacy in reducing readmissions for ADHF. The purpose of this study is to evaluate the impact of pharmacist telephone intervention after hospital discharge for ADHF on unplanned healthcare visits. We hypothesize that pharmacist telephone intervention post discharge will decrease unplanned healthcare visits Methods: This non-blinded, non-randomized, single-center, retrospective study will evaluate the impact o post discharge telephone interventions on unplanned healthcare visits, defined as hospital readmissions, emergency department visits, and unplanned clinic appointments. Patients will be included if they are admitted to a cardiology service with a primary diagnosis of ADHF and do not meet exclusion criteria. The control group will include ADHF patients admitted from May 1, 2012-August 31, 2012. The intervention group will include patients admitted from October 15, 2012-February 15, 2013. Electronic medical records(EMR) and phone call interviews will be used to gather demographic data, past medical history, medication therapies, and hospital readmissions. Patients receiving the intervention will be called two to five days post-discharge to receive further medication counseling and reminders about clinic appointments. The primary endpoint is hospital readmissions and will be evaluated via a 30 day phone call follow up and EMR review. Secondary outcomes include unplanned clinic appointments and emergency department visits at 30 days, compliance with scheduled clinic appointments within 7, 14, and 30 days after discharge, and frequency of medication titration and initiation at follow up appointments. Descriptive statistics will be used for baseline variables. Chi-square or Fisher exact tests, student t-tests or Wilcoxon rank-sum tests will be used as appropriate. Results: In Progress

Learning Objectives:

Report current heart failure epidemiology and statistical prevalence

Define CMS classifications of readmission

Self Assessment Questions:

In 2010 the estimated 30-day readmission rate among patients enrolled in Medicare following hospital discharge with a heart failure diagnosis was:

A 10.2%

B: 16.8%

C: 26.9%

D: 45.7%

In 2010 the estimated direct and indirect cost of heart failure in the United States was

A $12.6 thousand

B $13.5 million

C $26.7 billion

D $37.2 billion

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-419 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECTS OF IN-UTERO EXPOSURE TO SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIS) AND VENLAFAXINE ON NEONATAL OUTCOMES

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Purpose: SSRIs and venlafaxine are frequently used to treat depression in women of childbearing age; therefore, the incidence of fetal exposure to these medications is high. In-utero exposure to SSRIs/venlafaxine can cause significant potential complications for the fetus/neonate, such as respiratory distress, cardiovascular abnormalities, increased risk of preterm birth, low birth weight, sleep disturbance, irritability, feeding difficulty, and agitation. A vast amount of literature regarding the effects of in-utero exposure to SSRIs on term infants is available, with minimal data regarding the effects in preterm infants. The purpose of this study is to assess the impact of in-utero exposure to SSRIs and venlafaxine on neonatal respiratory status, particularly in the preterm infant population, and to determine if any of the particular medications evaluated are safer and therefore preferred in depressed pregnant women. Methods: A retrospective chart review was conducted to evaluate neonatal outcomes following in-utero exposure to SSRIs or venlafaxine. Preterm and term neonates born during the evaluation period from 2007-2012 were considered separately. Exposed patients were defined as being exposed to one of the SSRIs or venlafaxine at some point in-utero. Control patients were assigned in a 1:1 fashion. Information regarding demographics, birth history, comorbidities, details of exposure (e.g. medication to which the neonate was exposed, dose, and gestational timing of exposure), and maternal information was collected. Apgar scores at five minutes were compared for exposed and control infants. The following secondary endpoints were also considered: one-minute Apgar scores, ventilator time, oxygen requirements, length of stay, birth weight, PPHN occurrence, and NICU admission rates. Statistical analysis consisted of Fishers exact tests, chi square tests, independent tests, Mann-Whitney U tests, and Wilcoxon signed rank tests according to the type of data being assessed. Results and Conclusions: Data will be collected and results will be analyzed for presentation at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the importance of safe treatment options for depression in pregnant patients.

Discuss the potential effects of in-utero exposure to SSRIs or venlafaxine.

Self Assessment Questions:

Which of the following statements is correct?

A Depression uncommonly occurs in women of childbearing potentia

B: SSRIs and venlafaxine are not frequently used during pregnancy

C: The fetus is not exposed to SSRIs or venlafaxine with maternal us

D: SSRIs and venlafaxine are frequently used during pregnancy and

Which of the following is a potential effect of in-utero SSRI or venlafaxine exposure?

A Respiratory insufficiency

B Decreased risk of preterm birth

C Increased birth weight

D Enhanced sleep and feeding

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-420 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF OPIOID EQUIVALENCE LABELING ON NURSE ADMINISTRATION HABITS

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Purpose: Opioid therapy for acute and chronic pain control is vital for patient comfort, the promotion of healing, and mitigation of anxiety and stress. Because therapeutic plasma levels of opioids are highly variable between patients, careful titration for adequate pain management is vital to optimize patient comfort and to prevent opioid overdose and respiratory failure. Over the past decade, a dramatic increase in unintentional deaths from opioids has occurred - with many of these deaths attributed to prescriber error and incorrect dose conversion practices. To our knowledge, our study will be the first to investigate if implementation of an opioid equivalency labeling education system will affect nurse administration habits of opioids as a means to reduce harm caused by high dose opioids. Secondary endpoints include evaluation of naloxone use in opioid overdose, comparison of pain scores, and evaluation of physician prescribing habits prior to and post intervention.

Methods: This quasi-experimental study conducted at a large tertiary care institution, enrolled 280 opioid nieve patients admitted to the internal medicine unit with at least one prn opioid order. A retrospective chart analysis was conducted for the control group (n=140) which consisted of patients enrolled between April 1, 2012-October 15, 2012 (prior to the intervention study phase). The intervention study phase was initiated on October 15, 2012, and consisted of extensive nursing education, hydromorphone PO and IV conversion labeling on PYXIS machines, and mandatory pop-up warnings when medication was withdrawn. Chart analysis will be conducted for intervention group patients (n=140) enrolled between October 16, 2012 - February 28, 2013. Results and Conclusions: Study in progress. Results and conclusions will be presented at the Great Lakes Conference

Learning Objectives:

Recognize challenges in pain management during inpatient hospitalizations.

Identify methods for optimization of pain control to enhance patient comfort and safety

Self Assessment Questions:

A 76 year old jaundiced female with chronic back pain is admitted to your unit for acute CHF exacerbation. What is NOT a risk factor for opioid overdose?

A Age

B: Hepatic failure

C: Chf

D: Chronic pain

A 56 year old male is admitted to the hospital for sickle cell crisis. During his hospital stay, he was initiated on his home medication regimen for pain control (hydrocodone 5mg/acetaminophen 325 mg

A Decrease his dose by 80%

B Increase his dose by 80% and schedule his hydrocodone/acetamin

C Keep the current dose, but schedule hydrocodone/acetaminophen

D Change pain control to hydromorphone 1-2mg IV q4hours prn

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-814 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

RAPID ORGANISM IDENTIFICATION VIA MALDI-TOF COMBINED WITH ANTIMICROBIAL STEWARDSHIP TEAM (AST) INTERVENTION DECREASES MORTALITY AND IMPROVES TIME TO CLINICAL CURE IN ADULT PATIENTS WITH BACTEREMIA AND CANDIDEMIA

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Matrix-Assisted Laser Desorption/Ionization-Time of Flight (MALDI-TOF) provides more timely organism identification than traditional methods. Integration of AST intervention with rapid diagnostic testing via MALDI-TOF could allow for early customization of antibiotic therapy. However, the clinical impact of utilizing this approach for patients with bacteremia and candidemia has yet to be evaluated. This single center, pre-post quasi-experimental study analyzed the impact of rapid pathogen identification via MALDI-TOF with AST review and intervention for adult hospitalized patients with bacteremia and candidemia over a 3 month period. AST members received real-time notification for all patients with positive blood cultures with bacteria and yeast between Sept-Nov 2012, and provided pre-established evidence-based antibiotic recommendations at the time of availability of Gram stain, organism identification via MALDI-TOF, and susceptibility testing results. The control group included all adult patients with positive blood cultures between Sept-Nov 2011, during which a traditional identification method (VITEK-2) was utilized and antibiotic prescribing was at the physicians discretion without real-time stewardship intervention. Patients transferred from an outside hospital with bacteremia or with coagulase-negative staphylococcus deemed to be a contaminant by pre-established criteria were excluded. A total of 908 patients were evaluated with positive blood cultures and 501 were included in the analysis. MALDI-TOF with AST intervention significantly improved mortality (14.5% vs 20.3%, p=0.023), intensive care length of stay (9.2 days vs 16.6 days, p=0.012), time to clinical cure (2.5 days vs 4.0 days, p<0.001), and time to optimal antibiotic therapy (2.0 days vs 3.8 days, p<0.001). The AST recommended 210 interventions (55 at Gram stain, 74 at identification, 81 at susceptibility) with a 90% acceptance rate. Utilizing MALDI-TOF with AST intervention resulted in decreased mortality, decreased ICU days, and improved time to clinical cure in patients with bacteremia and candidemia.

Learning Objectives:

Describe the importance of rapid initiation of appropriate anti-infectives in patients with bloodstream infections

Discuss the potential role of MALDI-TOF and antimicrobial stewardship team intervention in patients with infectious diseases

Self Assessment Questions:

Which of the following statements regarding initiation of appropriate antimicrobial therapy is FALSE?

A Use of rapid organism identification may result in decreased time t

B: Timely initiation of appropriate antibiotic therapy reduces mortality

C: Conventional methods of organism identification tend to be more a

D: All of the above are TRUE

What type of technology does MALDI-TOF utilize to perform rapid organism identification?

A PCR (polymerase chain reaction)

B Mass spectrometry

C In-situ hybridization

D Microbroth dilution

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-689 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PERFORMANCE IMPROVEMENT PROCESS: IMPROVED PATIENT OUTCOMES THROUGH PHARMACY LED MEDICATION RECONCILIATION

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Purpose: Following hospital discharge, patients commonly return home with complicated medication regimens, possibly resulting in confusion. This can lead to adverse drug events (ADEs) and rehospitalizations. In 2003 there were over 38 million hospital discharges; 13% required re-hospitalization. Payne et al estimated a total cost savings of $5.1 billion if 4.7% readmissions were prevented. Studies show pharmacist completed medication reconciliations are more accurate. One study found pharmacist led medication reconciliations reduced discharge medication errors from 90% to 47% on a surgical unit and from 57% to 33% on a medical unit. The primary purpose of medication reconciliations is to provide a complete review of a patients medication regimen. The primary objective was to evaluate if pharmacist led medication reconciliations are associated with decreased readmission rates, increased cost savings, and improved patient outcomes.

Methods: The study methods were approved by the Institutional Review Board committee. Patients were eligible if they were discharged to home. Patients discharged to an ECF or LTCF were excluded. Following a discharge to home order, a pharmacist reviewed the medication regimen and counseled patients. This counseling may cover new medications, changes to previous home medications, proper administration technique (for inhalers, etc.), disease state, and address questions the patient or family/caregivers have. In 2010 the Patient Protection and Affordable Care Act was published and identified the five core components MTM should include. These components are (1) medication therapy review (2) personal medication record (3) medication related action plan (4) intervention and/or referral and (5) documentation and follow-up. Pharmacists can use these elements to obtain and maintain accurate patient medication information.

Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the importance of pharmacist led medication reconciliations and possible impact made on patient care.

Identify the purpose of medication reconciliations.

Self Assessment Questions:

It is estimated that preventing 4.7% of readmission rates can result in a total cost savings of approximately $____ billion annually:

A $7.3
B: $1.8
C: $5.1
D: $3.3

Which of the following is the primary purpose of medication reconciliations?

A To provide a complete review of a patients' mediation regimens.
B To increase pharmacists role in patient care.
C To alleviate this responsibility from other healthcare professionals.
D To decrease annual healthcare expenditures.

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-421 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A PILOT STUDY EVALUATING THE EFFECT OF DAILY COUNSELING BY A PHARMACIST ON MEDICATION RELATED HCAHPS SCORES AND MEDICATION RECONCILIATION SATISFACTION

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Purpose: Pharmacists take an active role in patient care by ensuring patients understand their drug regimens. Counseling patients about their medications and potential side effects can increase adherence and decrease readmission rates.1 Medication reconciliation ensures all appropriate medications are continued on admission and inappropriate medications are discontinued.2 The Center for Medicare and Medicaid (CMS) has established reimbursement criteria based on the quality of pharmaceutical care and medication communication.3 The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey measures medication communication and assesses patient satisfaction with caregiver communication about their medications and potential side effects.4 We hypothesized that by increasing the frequency of patient counseling sessions for a patient during their hospital admission, patient satisfaction scores regarding medication communication will be improved. We additionally hypothesized that pharmacist driven medication reconciliation will improve caregiver satisfaction with the process.Methods: This single center, parallel study was designed to determine whether the impact of a pharmacist counseling patients daily during hospital admission and completing medication reconciliation for each patient, will improve HCAHPS scores as well as increase caregiver satisfaction with the medication reconciliation process. Patients included in this study were those admitted to the control or intervention unit. Daily patient counseling was performed on the intervention unit by the primary investigator. The control unit reflected the standard of care, and the primary investigator counseled patients only on admission. The primary investigator also reconciled medications for each patient on the intervention unit. The overall satisfaction of the medication reconciliation process assessed through a survey provided to caregivers before and after the study on the intervention unit. Statistical analysis consisted of a Wilcoxon Signed Ranked Matched Pairs Test and student t test for the appropriate indices.Results and Conclusions: To be determined and presented at the 2013 GLPRC.

Learning Objectives:

Describe the patient counseling and medication reconciliation process implemented at Hillcrest Hospital.

Discuss the impact the patient counseling and medication reconciliation process had on medication related HCAHPS Survey Scores.

Self Assessment Questions:

The HCAHPS Survey assesses patients satisfaction with what?

A Communication about medications and what they are used for
B: Communication about side effects
C: A only
D: A and B

Which of these are established benefits of patient counseling by pharmacists?

A Decreased admission rates
B Increased adverse events
C Decreased adverse events
D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-690 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF PASSIVE AND ACTIVE MARKETING STRATEGIES ON PATIENT ACCEPTANCE OF MEDICATION THERAPY MANAGEMENT SERVICES

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Purpose: Medication therapy management (MTM) services have resulte in positive patient outcomes. However, patient acceptance rates of the service have been lower than desired. Therefore, the perceptions and expectations of patients need to be accounted for when marketing MTM. The objectives of this study are to: (1) measure patient acceptance rates when comparing four distinct marketing strategies, (2) evaluate reasons for patient acceptance or refusal of MTM services, anc (3) evaluate the costs of marketing a new service.□□Methods: Four marketing approaches have been developed to provide both passive anc active tools for engaging patients in MTM services. These were designe based on the findings of previous patient focus groups. The strategies include (1) letters and (2) bag stuffers (passive approaches) and (3) face to-face and (4) telephone calls (active approaches) to offer MTM services. All approaches use the same language when describing MTM Thirty locations within a large grocery store chain pharmacy were randomly assigned to one of the four marketing approaches. Patient acceptance rates will be compared among the four groups using chi-squared analysis and logistic regression techniques. Following the offer of an MTM appointment, patients will be invited to take part in one of twc brief telephone surveys, depending on their decision to accept or decline the service. The surveys will further assess reasons for accepting or declining MTM services and their perceived value of the service. This study has been approved by the Purdue University Institutional Review Board.□□Preliminary Results: Data collection is in progress. Results wil be presented at the Great Lakes Pharmacy Resident Conference.□□Conclusions: Upon conclusion of this study, pharmacists will be able to better utilize marketing strategies for MTM services based upon knowledge of patient preference and acceptance rates.

Learning Objectives:

List potential barriers to patient engagement in MTM services.

Describe patient-identified factors that are important when marketing MTM.

Self Assessment Questions:

Which of the following are potential barriers to patient engagement in MTM services?

A Lack of patient understanding of MTM

B: Clear provider roles relating to MTM

C: Patient perception of the need for such as service

D: Both A and C are correct

Which of the following has been established as an important consideration in marketing MTM?

A Marketing aspects of MTM that patients perceive as beneficial

B Assuming the patient already knows the purpose of the service

C Using terms such as “CMR” and “medication therapy management

D Explaining that any health care professional could provide MTM

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-691 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF AN EMERGENCY DEPARTMENT CHRONIC PAIN MANAGEMENT DIRECTIVE IN A COMMUNITY HOSPITAL

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Purpose: □Pain is a frequent symptom of patients presenting to emergency departments (ED) and has received increased attention in the past decade due to the Joint Commissions focus on patient satisfaction. A possible unintended consequence of these efforts is the increase in opioid prescription drug seeking and abuse, which has become the fastest growing drug problem in the United States. This project will focus on implementing tools to abate and manage drug-seeking behaviors for opioids in the ED at St. Elizabeths Hospital, a 300 bed community teaching hospital in Belleville, IL. The purpose of this retrospective study is to evaluate the outcomes of these directives on opioid prescribing and chronic pain repeat visits in the ED. □□Methods: □

As a pilot project for appropriate pain management in the St. Elizabeths ED, policies on opioid prescribing for chronic non-malignant pain and signage communicating expectations for patients seeking pain relief were developed. As a component of the policy, a protocol detailing compulsory documentation of the urine drug screen, assessment of the opioid use risk and review of the prescription monitoring records performed by the ED provider was included. Outcomes will be assessed through comparison of patients receiving opioids for the three months following policy implementation to those during the same three months in the prior year. IRB approved data collection will be performed for patients greater than 18 years of age administered controlled pain medications for a chronic non-cancer pain related chief compliant and will include: demographics, diagnosis, allergies, insurance, imaging, drug screen, ED treatment modalities, reported opioid use, prescriber, discharge prescriptions, prescription monitoring screening documentation, and Opioid Risk Tool assessment. From this analysis, it is hypothesized that implementing a directive will promulgate appropriate, safe opioid prescribing practices and identify problematic ED use. □□Results/Conclusions: □Data collection is currently being conducted and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify drug-seeking behaviors patients may present with in the emergency department.

Discuss the pros and cons of state prescription monitoring programs (PMP).

Self Assessment Questions:

Which of the following could be identified as a possible drug-seeking behavior?

A Requesting an MRI of the knee for new onset pain

B: Demanding to be given an IV opioid by name

C: Asking for a pain management referral

D: Chief complaint of low back pain

According to the Alliance of States with Prescription Monitoring Programs, which of the following is a goal of using PMPs?

A Denial of substance abuse treatment program access

B Alerting local law enforcement of patient opioid abuse

C Determine which providers are over prescribing

D Initiating public health directives and awareness

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-692 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PLACING ORAL NUTRITIONAL SUPPLEMENTS ON THE ELECTRONIC MEDICATION ADMINISTRATION RECORD

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Purpose: Malnutrition is associated with an increase in healthcare expenditure, morbidity, and mortality. Malnourished patients are more likely to develop infections, pressure ulcers, and have an increased length of hospitalization. Treating oral nutritional supplements (ONS) like medications by placing them on the electronic medication administration record (eMAR) has been shown to improve documentation, reduce waste, and enhance patient outcomes. Currently, there is no standard for documentation of ONS at NorthShore University HealthSystem (NorthShore) In April 2012, an internal audit was conducted at NorthShore which showed that only 32% of ordered ONS doses were documented as consumed. The purpose of this project is to implement and evaluate a new workflow for nutritional supplements that would include placing ONS on the eMAR. Methods: A taskforce of pharmacists, dieticians, nurses, purchasers, and health information technologists was gathered to discuss current workflows. The taskforce developed a new workflow for ordering, dispensing, billing, administering, and documenting ONS on the eMAR. A retrospective review of pre- and post-implementation data will be performed. The measures to be assessed include percentage of ordered ONS consumed; proportions of administrations documented; and ONS utilization assessed through number of units purchased, total acquisition cost, and financial impact of the new workflow.

Results/Conclusion: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the complications associated with malnutrition

Discuss the advantages and limitations of placing ONS on the eMAR

Self Assessment Questions:

Which of the following complications are associated with malnutrition?

A Pressure Ulcers

B: Infection

C: Decreased length of hospitalization

D: A and B

Which of the following is a possible advantage to placing ONS on the eMAR?

A Increased Mortality

B Reduced waste

C Improved compliance

D B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-693 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

A SINGLE CENTER, RETROSPECTIVE ANALYSIS OF LEFLUNOMIDE IN COMBINATION WITH A CALCINEURIN INHIBITOR AND CORTICOSTEROIDS FOR MAINTENANCE IMMUNOSUPPRESSION IN RENAL TRANSPLANT RECIPIENTS

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Purpose: Leflunomide is an isoxazole immunomodulatory agent FDA approved for rheumatoid arthritis, and has been used in solid organ transplant for prevention of polyoma virus induced nephropathy. In addition to antiviral activity, research has shown activity on cellular and humoral components of rejection and synergy with calcineurin inhibitors via inhibition of pyrimidine synthesis and IL-2 mediated T-cell proliferation. This makes leflunomide a compelling alternative as an immunosuppressant agent, especially because of long term adverse effects related to calcineurin inhibitors. Because of the paucity of data regarding its use in humans as an immunosuppressant, this single center study was designed to determine the impact of leflunomide in combination with a calcineurin inhibitor and steroids as maintenance immunosuppression on renal transplant outcomes. Methods We retrospectively reviewed the electronic medical records of renal allograft recipients transplanted at our institution from January 2008 to December 2011. Patients who received leflunomide in combination with a calcineurin inhibitor without concomitant BK viremia were included in the analysis and were compared to a cohort who did not receive leflunomide. The primary outcome of the study is the change in the calculated glomerular filtration rate at 0, 3, 6, and 12 months post transplant between the leflunomide and non-leflunomide groups. Secondary outcomes include the incidence of treatment failure, change in corticosteroid and calcineurin inhibitor dose, and incidence of treatment emergent adverse effects. Results: Preliminary and final results are unavailable at this time. Analysis of results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Review the immunosuppressive properties and adverse effects of leflunomide

Identify a potential role of leflunomide in renal transplant recipients

Self Assessment Questions:

By inhibiting pyrimidine synthesis, leflunomide is most similar to which other immunosuppressant?

A Prednisone

B: Azathioprine

C: Tacrolimus

D: Belatacept

Leflunomide has shown benefit for which of the following conditions related to renal transplant recipients?

A Post-transplant Diabetes Mellitus

B CMV viremia

C Prevention of BK nephropathy

D Calcineurin inhibitor toxicity

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-422 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF CORTICOSTEROIDS ON PSYCHOPHARMACOLOGIC MEDICATIONS DURING END- OF- LIFE CARE

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Background/Purpose: Corticosteroids are an essential medication in the palliative care setting due to their ability to treat multiple symptoms that occur at end-of-life. However, there are many risks associated with the use of corticosteroids including the potential for neuropsychiatric adverse effects such as insomnia, delirium, and changes in cognitive function. The purpose of this study is to assess the correlation between the use o corticosteroids and the amount of haloperidol and/or benzodiazepines used to treat neuropsychiatric symptoms at end of life. The primary objective of the study is to determine if the use of corticosteroids within 72 hours of death increases the amount of haloperidol and/or benzodiazepines to treat neuropsychiatric symptoms within the last 48 hours of life.□□Methods: This study is a retrospective, cohort analysis that will compare the amount of haloperidol and/or benzodiazepines administered to Veterans who received a corticosteroid within the last 72 hours of life with Veterans who did not receive a corticosteroid. Veterans admitted to the inpatient hospice unit at the Robley Rex Veterans Affairs Medical Center between October 1, 2011 and September 31, 2012 for a minimum of 48 hours and who died during admission were included in the study. Data reviewed included demographics, amount of haloperidol and/or benzodiazepines, indication for haloperidol and/or benzodiazepines, route, dose, and indication of corticosteroid. All corticosteroid doses will be converted to the equivalent prednisone dose to account for variability of corticosteroid that may have been administered. The total amount of haloperidol and/or benzodiazepines used to treat neuropsychiatric symptoms within 48 hours of death will be calculated and compared between the two groups.□□Results/Conclusion: Data collection is in progress. Results and conclusion will be presented at the conference.□□The contents of this project do not represent the views of the Department of Veterans Affairs or the United States Government.

Learning Objectives:

Identify adverse effects associated with corticosteroid use.

Review risk factors for developing neuropsychiatric complications associated with corticosteroid use.

Self Assessment Questions:

Which of the following is an adverse effect associated with corticosteroic use?

A Delirium

B: Improved wound healing

C: Hypoglycemia

D: Weight loss

Which of the following is a proven risk factor for developing neuropsychiatric complications associated with corticosteroid use?

A Age

B Preexisting psychiatric disorder

C Gender

D Dose

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-423 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EMERGENCY DEPARTMENT VISITS FOR ADVERSE DRUG EVENTS TO DEVELOP INSTITUTIONAL GUIDELINES FOR INITIAL TREATMENT OF COAGULOPATHY, HYPOGLYCEMIA AND BRADYCARDIA

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Purpose□Medications may confer serious risks of adverse events. Many adverse drug events (ADE) lead to emergency department (ED) visits and hospital admissions. A national surveillance study of ADE visits to EDs conducted in 2004-2005 concluded that the three most causative drugs were warfarin, insulin and digoxin. Due to the common occurrence of ADEs and their potential for patient harm, NorthShore University HealthSystem (NorthShore) is reviewing emergency visits for coagulopathy, hypoglycemia and bradycardia and characterizing events that were drug-induced. Treatment provided in the ED for these drug-induced ADEs, in addition to published literature, will be used to develop institutional guidelines to facilitate initial treatment of drug-induced coagulopathy, hypoglycemia and bradycardia at NorthShore.

□□

Methods□This evaluation is a quality improvement project and exempt from Institutional Review Board review. Reports generated from the electronic health record system will be used to identify and randomly select patients who presented to NorthShore EDs from January 1, 2011 to October 31, 2012 with coagulopathy, hypoglycemia and bradycardia. Exclusion criteria include patients with intentional overdoses, self-inflicted injuries, and illicit substance use. Data for the following parameters will be obtained: age, sex, diagnosis, length of stay, admission date, discharge date, hospital unit if patient was admitted, implicated medications/precipitating factors causing the ADE and medical care provided to resolve the ADE. The Naranjo algorithm will be used to determine if ADEs were drug-induced. Current medical practice and published literature for treatment of coagulopathy, hypoglycemia and bradycardia will be used to develop initial treatment guidelines for NorthShore emergency departments.□□Results/Conclusion□Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Define adverse drug events and describe its prevalence in the United States

Outline steps to developing initial treatment guidelines for emergency department

Self Assessment Questions:

The probability of an adverse drug reaction in a patient can be assessed using:

A clinical judgment

B: serum level of the medication

C: Naranjo algorithm

D: NCC MERP (National Coordinating Council Medication Error Repo

Which of the following should be considered most when developing treatment guidelines for an institution?

A major causes of morbidity and mortality for a given population

B incidence of the disease state

C patient and physician convenience

D evidence-based studies

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-424 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF OBJECTIVES FROM THE ASHP 2015 AND PPMI INITIATIVES TO INSPIRE PHARMACY PRACTICE CHANGE IN A VA MEDICAL CENTER

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Purpose: To prioritize a pharmacy department goal for process improvement, utilizing the PPMI self-questionnaire and previously associated ASHP 2015 goals. Once identified, the project will move towards creating an action plan and development/implementation of the goal. Methods: This project has been deemed a quality improvement project, and is thus exempt from IRB approval. The project involves three phases. Initially, an assessment that utilized goals from the ASHP 2015 initiative and appropriate sections from the ASHP PPMI self-questionnaire was created. Once the assessment was prepared, step two involved holding roundtable discussions. Each discussion group was formed based on area of practice. For example there were separate discussion groups for the pharmacy technicians, staff pharmacists, clinical pharmacists, pharmacy residents, and pharmacy administration. The objective of these discussion groups was to rank the goals listed in the assessment from highest to lowest priority. After compiling the results of the discussion groups, a single goal that ranked the highest among all of the groups was selected for further development. The third part of this project is to develop an action plan with a detailed time-line for completion. Data Collection/Analysis: A total of 52 individuals from the pharmacy department completed the assessment. The objective that ranked the highest within the department is as follows: Do individual pharmacists at our hospital accept responsibility for both the clinical and the distributive activities of the pharmacy department? To address this objective, four different projects are currently in development. Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the history of the ASHP 2015 initiative and the Pharmacy Practice Model Initiative (PPMI)

Describe the evolution of the roles of staff pharmacists and clinical pharmacists at the Roudebush VA Medical Center

Self Assessment Questions:

The second initiative that ASHP put forth to inspire pharmacy practice change was called the ASHP:

A 2020 Initiative

B: 2015 Initiative

C: Pharmacy Practice Change Initiative (PPCI)

D: Pharmacy Practice Model Initiative (PPMI)

Which of the following is an advantage of job rotation?

A Increased employee turnover

B Increased overall job satisfaction

C Decrease in continuity

D Decrease in skilled workers

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-694 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIMICROBIAL PROPHYLAXIS OF EXTERNAL VENTRICULAR DRAINS IN PEDIATRIC NEUROSURGICAL PATIENTS

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Background: External ventricular drains (EVD)s are commonly employed in neurosurgery settings in order to remove cerebrospinal fluid (CSF). Due to infection risk with these devices, antibiotics may be used. However, lack of published data makes selecting the appropriate drug, dose, and duration difficult. Prolonged antibiotic prophylaxis may expose patients to potential adverse effects and may also adversely impact antimicrobial resistance. Purpose: To determine the incidence of EVD related infections and to determine if use of prophylactic antibiotics outside the peri-operative period leads to a difference in the incidence of infection or in the resistance patterns of causative organisms in pediatric patients at Riley Hospital for Children at IU Health (Riley) and Riley Hospital at IU Health Methodist Hospital (Riley at Methodist).

Methods: This is a retrospective study of patients ≤ 18 years old who underwent EVD placement at Riley or Riley at Methodist from August 1, 2007, to July 31, 2012, and received peri-operative antimicrobial prophylaxis (≤ 24 hours or ≤ 3 doses) for their EVD (control group) or peri-operative prophylaxis plus extended duration of antibiotics to prevent EVD infections (treatment group). Patients with traumatic brain injury with fractures that increased risk of CSF leaks/CSF infections (depressed skull fracture, sinus fracture, basilar skull fractures) were excluded. Patients who had CSF leakage or a CNS infection at the time of EVD placement and immunocompromised patients were also excluded. Patient demographics, EVD and laboratory data, prophylactic antibiotic courses, and evidence of infection were collected. An EVD-related infection was defined as one positive CSF culture collected after EVD placement. This information was used to calculate and compare infection rates between treatment and control groups. Healthcare Infection Control Practices Advisory Committee criteria was used to determine if causative organisms were MDR organisms.

Results/Conclusions: On-going; findings will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List non-pharmacologic techniques employed to prevent EVD-related infections.

Identify organisms most commonly associated with EVD-related infections.

Self Assessment Questions:

Non-pharmacologic techniques to prevent EVD-related infections include

A Tunneling the EVD catheter

B: Using an open drainage and monitoring system

C: Minimizing EVD manipulations

D: A and C

The following organisms/classes frequently contribute to EVD-related infections:

A Normal gut flora

B Normal skin flora

C Escherichia coli species

D Clostridium difficile

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-695 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EMPIRIC MRSA TREATMENT FOR HEALTHCARE-ASSOCIATED PNEUMONIA IN PATIENTS WITH NEGATIVE MRSA NASAL SWABS

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Purpose: Methicillin-resistant Staphylococcus aureus (MRSA) contributes to approximately 20-40% of nosocomial pneumonias in the United States. A delay in the initiation of appropriate antimicrobial therapy has been associated with increased hospital mortality. Therefore, it is essential to initiate appropriate empiric treatment, including MRSA coverage if risk factors are present. One of the most common risk factors for MRSA infections is colonization of the nares. Though MRSA colonization increases the risk for MRSA pneumonia, individuals not colonized may still be at risk due to nosocomial transmission. The Infectious Diseases Society of America (IDSA) guidelines recommend the addition of vancomycin or linezolid for empiri treatment of nosocomial pneumonia secondary to increased risk of MRSA infections in the healthcare and hospital settings. The purpose of this study is to determine if there is a difference in clinical outcomes of subjects treated with or without MRSA agents who are not colonized with MRSA. □□Methods: This is a retrospective study of patients treated for HCAP, HAP or VAP between June 1, 2011 and June 30, 2012 who were not colonized with MRSA. Subjects will be included in this study if they are treated with one of the following anti-pseudomonal antimicrobials: cefepime, ceftazidime, imipenem, meropenem, doripenem, piperacillin/tazobactam, aztreonam, or ciprofloxacin with or without the addition of MRSA coverage. Subjects who received vancomycin or linezolid for greater than 48 hours and continued an anti-pseudomonal antimicrobial will be included in the MRSA treatment group. Subjects who did not receive MRSA coverage or received vancomycin or linezolid for less than or equal to 48 hours and continued an anti-pseudomonal antimicrobial will be included in the non-MRSA treatment group. Clinica outcomes data between the MRSA treatment group and non-MRSA treatment group will be compared. □□Results and Conclusions: □

Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the risk factors associated with Methicillin-resistant Staphylococcus aureus pneumonia.

Discuss empiric treatment recommendations based on the IDSA guidelines for HCAP, HAP, and VAP.

Self Assessment Questions:

Which of the following is a known risk factor for MRSA pneumonia?

A MRSA positive nares
B: Hospitalization within the last 2 years
C: Hypertension
D: Diabetes

Per the IDSA guidelines, which regimen is recommended for empiric treatment of late onset hospital-acquired pneumonia?

A Ciprofloxacin + Azithromycin
B Piperacillin/tazobactam + Vancomycin
C Ertapenem + Linezolid
D Amoxicillin/clavulanate + Levofloxacin

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-425 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHRONIC METHOTREXATE USE IN RHEUMATOID ARTHRITIS AND PSORIATIC ARTHRITIS/PSORIASIS AND COMPLIANCE WITH LIVER BIOPSY RECOMMENDATIONS

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Purpose: The purpose of this study is to find Capt. James A Lovell Federal Health Care Centers (FHCC) compliance rate with liver biopsies in patients on methotrexate for the treatment of rheumatoid arthritis (RA), psoriasis (Ps) and psoriatic arthritis (PsA). □□Methods: In this retrospective chart review, the computerized patient record system (CPRS) will be used to identify patients 18 years and older with RA, Ps, or PsA and on methotrexate. Patients with baseline liver abnormalities, juvenile RA, active alcohol abuse, receiving methotrexate from outside c the VA, or do not have documented LFTs will be excluded. Data collected will include: age, gender, body mass index, creatinine clearance, diagnosis (RA, Ps, PsA), presence of diabetes, smoking, alcohol abuse, liver function tests, cumulative methotrexate dose, and where the patient was treated (primary care or specialty clinic).Data will be recorded without patient identifiers and maintained confidentially. The primary endpoint will be determined by finding whether the patients who met the appropriate criteria received a liver biopsy. Secondary endpoints will include assessing the correlation between hepatotoxic risk factors and positive liver biopsies. The compliance rates of patients managed by primary care will be compared to those managed by specialty clinic patients. □□Results: The study is still under investigation. Data collection and statistical analysis will be completed by April 2013. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize patients on methotrexate who meet criteria for liver biopsy

Identify patient risk factors for hepatotoxicity with methotrexate use

Self Assessment Questions:

The American College of Rheumatology (ACR) recommends a liver biopsy in RA patients when:

A Total bilirubin > 1.5 g/mL
B: 5/9 or 6/12 abnormal AST values in a 12 month period
C: An increase in albumin
D: Both A and B

Risk factors for hepatotoxicity in PsA patients on methotrexate include:

A History of kidney stones
B History of diabetes
C Current or history of smoking
D Both B and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-426 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMMUNITY PHARMACIST-LED PAIN MANAGEMENT: AN ASSESSMENT OF PATIENT SATISFACTION

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Purpose: A number of patients are discharged from the hospital needing pain management, for a multitude of reasons. However, many patients pain may sub-optimally managed after discharge, resulting in difficulties with adequate pain control. Pharmacists offer the ability to provide patient-centered education about pain therapy. The purpose of this study was to demonstrate enhanced continuity of care, measured by no worsening in patients pain scores, after discharge. The data collected from this study will be used to determine if a community pharmacy located within a primary care hospital can successfully offer pain management services. Methods: This crossover, quantitative, descriptive study was approved by the Investigational Review Board at Southern Illinois University School of Medicine and measured patient satisfaction on pain management education following discharge. Participants were recruited through the use of hospital daily pain reports and discharge tracking methods. Individuals were deemed eligible if they were 18 years of age or older and known to be taking pain medications for at least two weeks. Patients were excluded if they had known concomitant substance abuse or had pain treatment less than two week. Between November 2012 and February 2013, pharmacists within a community pharmacy at St. Johns Hospital Pavilion, located within a primary care facility, provided patient-centered pain management education prior to discharge. Education included medication counseling and non-pharmacological management of pain. After education completion, individuals that provided informed written consent were asked to complete a survey about pain management. Participants were contacted two weeks after discharge for a follow-up survey to assess the effectiveness and satisfaction of discharge counseling. Pain scores and a satisfaction Likert scale were used to interpret effectiveness and satisfaction, respectively.

Results/Conclusions: Data collection and analysis are currently being performed. Final results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize areas in which pharmacists can make an impact in patient-centered pain management

Discuss important counseling points for patients undergoing patient-centered pain management

Self Assessment Questions:

A pharmacist can improve the quality of a patient's pain management by completing which of the following?

A Creating a standard pain management plan suitable for every patie
B: Treating patients with skepticism when requesting opioids for pain
C: Realizing patients will become addicted to opioids regardless of ho
D: Involving the patient when creating a treatment approach for pain r

What is an appropriate education point a pharmacist can provide a patient undergoing pain management?

A The use of multiple analgesics with differing mechanisms has bee
B Complementary therapy such as seeing a chiropractor or massage
C Pain medications should not be taken regularly due to the risk of a
D Elderly patients should receive therapy for constipation on opioid th

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-427 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

POST-OPERATIVE PAIN MANAGEMENT IN HIGHLY OPIOID TOLERANT PATIENTS

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Purpose: With the increased utilization of opioids in the United States, the risk for the development of opioid tolerance continues to rise. While the number of opioid tolerant patients has grown, there is limited literature on post-operative pain management in highly opioid tolerant patients. The objective of this study was to evaluate post-operative pain management in highly opioid tolerant patients prior to and after the initiation of a pain order set. Methods: This retrospective chart review assessed the effectiveness of a structured pain order set to provide optimal pain control while maintaining patient safety in the management of post-operative pain. Highly opioid tolerant patients undergoing total knee arthroplasty (TKA) or total hip arthroplasty (THA) from January 2010 through August 2012 were included. The primary outcome was the change in daily opioid dosages from the initial therapy to 48 hours post-operative. High opioid tolerance was defined as the utilization of greater than 90 mg of oral morphine equivalents daily, prior to admission. Patients who received treatment according to the pain order set were compared to patients who received treatment prior to implementation of the order set. A secondary outcome was evaluation of pain scores during the same 48 hour period. The primary safety outcome was the occurrence of respiratory depression, sedation, and acute kidney injury in both treatment groups. RESULTS: There are 60 patients who met inclusion for review, 39 patients in the treatment group and 21 patients in the control group. Data analysis is currently ongoing. CONCLUSION: The results of this study will help standardize the post-operative pain management in highly opioid tolerant patients.

Learning Objectives:

Describe the risk factors and pharmacology in development of opioid tolerance.

List potential side effects of opioids of concern when treating highly opioid tolerant patients.

Self Assessment Questions:

What is time period over which opioid tolerance develops?

A 1 week
B: 1 month
C: 4 months
D: 1 year

Which of the following side effect(s) is/are of concern when utilizing higher doses of opioids?

A Respiratory depression
B Sedation
C Constipation
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-696 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

URINARY TRACT INFECTIONS IN RENAL TRANSPLANT PATIENTS WITH URETERAL STENTS

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Although the intraoperative placement of ureteral stents reduces post-transplant complications such as ureteral obstruction and leak, it is associated with an increased risk of urinary tract infections (UTI) in kidney transplant recipients. Optimal antibiotic prophylaxis for UTI in this population has not been established. The purpose of this study is to evaluate the efficacy of a 30-day oral trimethoprim/sulfamethoxazole (TMP/SMX) 80/400 mg once daily regimen in prevention of UTIs during the early post-transplant period in kidney transplant recipients with ureteral stents. This project is a retrospective cohort study of adult kidney transplant recipients at the University of Michigan between July 2010 and June 2012. Included patients received ureteral stents intraoperatively and either oral TMP/SMX 80/400 mg once daily with an intended duration of 30 days (study cohort) or a single dose of inhaled pentamidine 300 mg (control cohort) for Pneumocystis jiroveci pneumonitis prophylaxis. Exclusion criteria include previous or multiple solid organ transplant, prior bladder surgery, use of suppressive antibiotics for UTI or greater than ten days of antibiotics for a non-UTI infectious complication post-operatively. Subjects were also excluded fo death unrelated to UTI, loss to follow-up, receipt of an investigational drug or immunosuppression other than tacrolimus, mycophenolate, prednisone, and rabbit antithymocyte globulin within 90 days of transplant. Patient and transplant characteristics, medication use history, urinalysis, urine culture, and UTI symptoms are collected from electronic medical records. Incidence of UTI within 30 days of transplant time to first occurrence of UTI within 90 days of transplant, and resistance of causative organisms to TMP/SMX will be compared between the study and control groups. Two-sided Student t-tests with a significance level of 0.05 will be used. Data collection and analysis is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the benefits of intraoperative ureteral stent placement in kidney transplant patients.

Identify risk factors for urinary tract infection in post-operative kidney transplant recipients.

Self Assessment Questions:

Ureteral stent placement in kidney transplant recipients is associated with which of the following

A Decreased rates of ureteral leak

B: Decreased rates of urinary tract infection

C: Decreased rates of graft loss

D: Decreased rated of rejection

The risk of urinary tract infection is increased in which group of post-operative kidney transplant patients

A Males

B Age < 65 years

C Living kidney donor recipients

D History of recurrent UTI prior to transplant

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-428 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF GENTAMICIN DOSING IN A NEONATAL INTENSIVE CARE UNIT

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Purpose: Gentamicin is one of the most frequently used antibiotics in neonatal patients. Neonates have physiologic characteristics that may alter the pharmacokinetics of gentamicin, including increased extracellular fluid content and decreased renal function as compared to older infants, children and adults. These characteristics result in increased volume of distribution and decreased clearance of gentamicin in neonates. In neonates, the goal serum gentamicin peak concentratior is between 6 and 10 mg/L and the goal serum trough concentration is less than 2 mg/L for empiric coverage. The empiric dosing guidelines used in the neonatal intensive care unit (NICU) at the University of Chicago Medicine Comer Childrens Hospital (CCH) have never been formally evaluated and goal concentrations may not be achieved with th initial dosing regimen. Methods: Neonates admitted to the NICU at CCH with post-natal age of greater than or equal to 7 days who received gentamicin during the period of January 1, 2010 to September 30, 2012 will be included in this retrospective chart review. Exclusion criteria will include renal insufficiency, requirement for extracorporeal membrane oxygenation or peritoneal dialysis, continuation of gentamicin therapy from an outside hospital, and serum gentamicin levels drawn before steady state is reached. The primary endpoint of this study is the incidence of goal peak and trough concentrations achieved after the initial dosing regimen, as analyzed using Chi-square analysis. Secondary endpoints include the final dosing regimen required to achieve goal serum concentrations, and the incidence of nephrotoxicity. The total dose will be analyzed by Students t-test and the incidence of nephrotoxicity will be analyzed by Chi-square. A snapshot analysis of 20 patients will be conducted to determine the sample size. Results: To be presented. Conclusion: To be presented.

Learning Objectives:

Describe the effect of physiological characteristics of neonates have on the pharmacokinetics of gentamicin compared to those of older children or adults.

Identify the rate of nephrotoxicity when dosing gentamicin by dosing guidelines.

Self Assessment Questions:

Which of the following pharmacokinetic parameters of intravenously administered gentamicin is significantly affected by the physiology of neonates?

A Absorption

B: Distribution

C: Metabolism

D: None of the above

Which of the following is the pharmacodynamic characteristic of gentamicin?

A Time/MIC

B Cmax/MIC

C Auc/mic

D None of the above

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-429 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF GRADE 3 AND 4 NEUTROPENIA IN PATIENTS WITH GYNECOLOGIC MALIGNANCIES RECEIVING PEGFILGRASTIM ON THE SAME DAY VERSUS NEXT DAY OF CHEMOTHERAPY

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Purpose: Gynecologic malignancies rank as the third most common type of cancer in women in the United States. In advanced disease, chemotherapy is a primary treatment modality. A common adverse effect of chemotherapy is myelosuppression, most notably neutropenia. A consequence of this immunocompromised state is infection resulting in clinically significant events such as hospitalization, sepsis, and death. The aim of this investigation is to assess the incidence of grade 3 and 4 neutropenia prior to subsequent cycles of chemotherapy in patients with gynecologic malignancies who receive pegfilgrastim the same day as chemotherapy compared to patients who receive pegfilgrastim within 24-72 hours after chemotherapy.□□Methods: This is a retrospective chart review conducted on patients who received chemotherapy accompanied by pegfilgrastim for a gynecologic malignancy at The Arthur G. James Cancer Hospital and the Mill Run Gynecologic Oncology infusion center from January 1, 2002 through July 31, 2012. Exclusion criteria include patients less than 18 years of age, age greater than 89, pregnancy, and prisoners. Data collection includes demographics, malignancy (ovarian, endometrial, fallopian tube, or cervical), disease stage(I, II, III, IV, recurrent), laboratory values and toxicities (anemia, neutropenia, thrombocytopenia, febrile neutropenia), bone pain, chemotherapy regimen, line of chemotherapy, treatment delay, dose modification, hospitalization for neutropenia, antibiotic use, and comorbidities (pulmonary disease, cardiovascular disease, liver disease, diabetes mellitus, open wounds, and active infections). Continuous parametric data will be analyzed using Students t-test and presented as mean. Continuous non-parametric data or ordinal data will be analyzed using Mann-Whitney U tests and presented as median. Fishers exact tests wil be utilized to analyze categoric data. Statistical significance will be set as a p-value <0.05.□□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the impact of timing of pegfilgrastim administration in relation to chemotherapy on the incidence of neutropenia in gynecologic oncology patients.

Report the incidence of treatment delay, dose modification, and hospitalization for neutropenia in relation to the timing of administration of pegfilgrastim and chemotherapy.

Self Assessment Questions:

Which of the following is a primary treatment modality in advanced gynecologic malignancies?

A Supportive care
B: Chemotherapy
C: Endocrine therapy
D: Radiation

Which of the following is the best measure of functional immune status?

A Procalcitonin
B Granulocytes
C Platelets
D Reticulocytes

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-430 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE IMPACT OF THE HOME BASED PRIMARY CARE SERVICE ADMISSION ON A GERIATRIC PATIENTS DRUG BURDEN INDEX

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Background: Anticholinergic and sedative medications are commonly prescribed medication classes in the geriatric population and are of grea concern because they can lead to poor physical and cognitive outcomes The Drug Burden Index (DBI) is a patented formula which calculates a DBI score using pharmacologic principles of medications with sedative and anticholinergic properties. A higher DBI score has been associated with poorer physical function and decreased cognitive performance. □□

Purpose: To evaluate the impact of the Home Based Primary Care Service admission on a Geriatric Patients DBI score and understand the impact of the healthcare team in decreasing the DBI score for a patient. The study will also evaluate the geriatric teams effect on the change in Anticholinergic Cognitive Burden Scale score (ACBS) and comparison o the change in DBI score to the change in ACBS score in order to determine which tool is a better predictor of fall risk. □□Methods: This is a retrospective, chart review of patients >65 years admitted to HBPC who receive an initial review by the interdisciplinary team, as well as medication reviews conducted by a pharmacist, and who have been in the program for at least 6-7 months. The initial DBI score upon admission will be compared to DBI scores upon second & third pharmacist reviews and the difference will be calculated. Information collected includes: reason for admission, demographic information, total number of disease states, total number of medications, medications with anticholinergic and sedative properties, including dose and dose adjustments of these medications, and total number of falls. Depending on the type of data, various tests will be used to compare outcomes, including means and standard deviations, a paired t test, chi square, or Fischers exact test. □□Results/Conclusions: Data collection is in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the utility of the Drug Burden Index score.

Review the impact of potential anticholinergic & sedative side effects in a geriatric patient.

Self Assessment Questions:

All of the following drugs are included in Drug Burden Index as having anticholinergic and/or sedative side effects except?

A Sertraline
B: Tramadol
C: Zolpidem
D: Warfarin

A higher Drug Burdex Index score may indicate which of the following?

A The patient may have a decreased risk of anticholinergic and seda
B The patient may have an increased risk of anticholinergic and se
C The patient may have an increased risk of anticholinergic side eff
D The patient's life expectancy has been reduced by half

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-431 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF TRANEXAMIC ACID ON ALLOGENEIC BLOOD TRANSFUSIONS IN PATIENTS UNDERGOING PRIMARY UNILATERAL TOTAL KNEE ARTHROPLASTY: A RETROSPECTIVE COHORT STUDY

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Background: There are more than 650,000 total knee arthroplasties (TKA) conducted in the United States each year. The main clinical indication for TKA is osteoarthritis which accounts for 94-97% of all cases. Despite blood conservation strategies, TKA is associated with significant perioperative blood loss often resulting in administration of blood transfusions. Storage, transportation, screening requirements, and a limited donation supply make blood transfusions a significant cost to the healthcare system. Additionally, blood transfusions place patients at risk for hemolytic reactions, fever, hives, infection, or immune reaction. Tranexamic acid is an antifibrinolytic commonly used in the perioperative setting to reduce blood loss. Purpose: The objective of this study is to evaluate the effect of a single intravenous perioperative dose of tranexamic acid on allogeneic blood transfusions in patients undergoing primary unilateral total knee arthroplasty. Methods: This is a retrospective cohort study conducted at Bronson Methodist Hospital comparing primary unilateral TKA patients who received tranexamic acid to those who did not. Patients were included if they were greater than 18 years old and underwent a primary unilateral TKA between January 2009 and December 2012. Patients were excluded if they underwent a concurrent surgery, revision of a TKA, or a bilateral TKA. Patients were stratified according to baseline hemoglobin to determine which patients are at highest risk of receiving a blood transfusion. Outcomes include evaluation of intraoperative and postoperative blood loss, proportion of patients exposed to allogeneic blood, and change in hemoglobin from baseline until discharge. Safety outcomes include incidence of venous thromboembolism, myocardial infarction, stroke or postoperative complications (surgical infection, hematoma, or ecchymosis) up to one month postoperatively. Results/Conclusions: Data collection and analysis is ongoing. Results and conclusions will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the mechanism of action of tranexamic acid.

Discuss the potential advantages of using tranexamic acid during a total knee arthroplasty.

Self Assessment Questions:

Which of the following describes the mechanism of action of tranexamic acid?

A Competitive inhibitor of fibrin

B: Competitive inhibitor of plasminogen activation

C: Noncompetitive inhibitor of antithrombin III

D: Direct thrombin inhibitor

Which of the following is a potential advantage of using tranexamic acid during a total knee arthroplasty?

A Increased incidence of myocardial infarction

B Complex dosing and administration

C Decreased administration of blood transfusions

D Decreased length of stay

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-697 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PAIN MANAGEMENT AT A COMMUNITY HEALTH SYSTEM

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Purpose: Effective and efficient management of pain in hospitalized patients is a common and challenging issue facing clinicians. As pain is subjective in nature, a patients own report is the basis for management. At NorthShore University HealthSystem, there is an absence of standardized tools available to clinicians to measure pain management. This may be a contributing factor to under or over treatment of pain. The objective of this project is to develop, implement, and assess a medication order set, summary report, pain assessment report, and use of pain consult service for the management of pain in hospitalized patients. Methods: A Pain Taskforce was established consisting of surgeons, hospitalists, pain specialists, nurses, pharmacists, and informatics specialists to address ongoing needs for improving staff responsiveness and treatment of pain. Project goals were reviewed and established with stakeholders, along with a discussion of the methods by which these goals could be accomplished. A series of new pain services were developed and implemented. Education will be provided to clinicians on proper utilization of these services and management of pain based upon results. The percentage of patients reaching their pain goal before and after implementation of the new pain services will be measured. Also, the frequency of utilization of pain services and frequency of pain assessments before and after implementation will be measured. Results / Conclusion: Analysis of pain services is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify barriers to providing pain management.

Describe ways to improve pain management in hospital institutions.

Self Assessment Questions:

Which of the following are services that can improve the management of pain?

A Medication order set

B: Consult service

C: Pain summary report

D: All of the above

What are potential barriers to pain management?

A Subjectivity of pain

B Pain scores

C Availability of tools for pain measurement

D Both A & C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-432 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

WHAT IS THE IMPACT OF CONSUMER HEALTH LITERACY ON THE POTENTIAL FOR UNINTENTIONAL OVERDOSE WITH ACETAMINOPHEN?: PATIENTS PERSPECTIVES

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Purpose: Separate research has been published on either patient health literacy or acetaminophen overdoses (intentional and unintentional); however, few studies have been conducted evaluating both areas together. The Food and Drug Administration has recognized acetaminophen overdose as a problem, and are taking steps to decrease its prevalence. This study assesses literacy problems focused on acetaminophen. Objectives of the study include: (1) identify patients health literacy regarding acetaminophen-containing products, (2) determine strategies patients find most effective in educating or alerting them about the risks of acetaminophen-containing products, and (3) define who consumers think is responsible for safe acetaminophen-containing product use.□Methods: Patients were recruited through direct patient contact at select community pharmacies, hospitals, and health-care clinics. Study enrollment was voluntary. Informed consent was offered and the participants were asked a demographic and Rapid Estimate of Adult Literacy in Medicine- Revised (REALM-R) questionnaire as well as several acetaminophen-related questions. Patient health literacy and perceptions data was collected, analyzed and interpreted. Data collection took place from October 2012 through February 2013. This study was approved as exempt by Purdue Universitys institutional review board (IRB).□Results: Data collection and interpretation was in process upon the submission of this abstract. To date, 19 patients have been analyzed. 89.5% of patients were considered adequately health literate, 57.9% agree that a combination of efforts to educate or alert consumers are necessary to address, and 57.9% of patients agree that both patients and a combination of the suggested responsible parties should be held accountable for decreasing unintentional overdoses. □Conclusions: Regardless of patients sociodemographics, specifically, higher education and/or health literacy level, patients are not adequately educated regarding risks of acetaminophen-containing products, leading to potential unintentional overdoses. These safety concerns need to be addressed and managed empowering the patient to take ownership of their health.

Learning Objectives:

Discuss strategies patients would find most effective in educating or alerting them about the possible dangers of acetaminophen-containing products.

Describe who patients think is responsible for consuming acetaminophen-containing products safely

Self Assessment Questions:

Which of the following parties do patients feel should be the least responsible for the safe consumption of acetaminophen-containing products?

A Patients
B: Government
C: Pharmaceutical industry
D: Health-care practitioners

Which of the following impactful methods of change do patients agree would be most effective in making acetaminophen use safer?

A Public service announcement
B Package change
C Increased education
D Combination of efforts

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-815 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF DEXMEDETOMIDINE FAILURE BEFORE AND AFTER THE IMPLEMENTATION OF A DEXMEDETOMIDINE PROTOCOL IN A MEDICAL/SURGICAL ICU

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Purpose: Dexmedetomidine (DEX), a selective α2-agonist, is approved for sedation of mechanically ventilated patients in the intensive care unit (ICU). Previously conducted trials suggest that DEX may improve ventilator weaning and decrease time of mechanical ventilation. The benefits of DEX in this setting are limited by its associated adverse effects of hypotension and bradycardia as well as by the potential of undersedation. The objective of this study is to determine if a DEX dosing protocol with standardized titration will decrease rates of premature discontinuation of DEX due to adverse events or undersedation leading to an increase in successful extubation rates within 24 hours of DEX initiation. A decrease in DEX failure rate would increase the cost-effectiveness of this medication as well as decrease hospitalization costs associated with longer intubation times and adverse effects that may prolong hospitalization, require additional treatment, or cause patient harm.□□Methods: This is a single-center, non-randomized study comparing a prospective cohort to a retrospective control group after the implementation of a DEX protocol in a Medical-Surgical ICU. Inclusion criteria include patients ≥ 18 years who are intubated and on mechanical ventilation for > 48 hours. Patients must have an indication for the use of DEX for ventilator weaning and extubation, require intravenous sedation, and have been deemed acceptable for ventilator weaning and extubation within 24 hours of initiation of DEX. The primary endpoint of this study is DEX failure (defined as discontinuation of DEX prior to extubation due to undersedation and/or adverse events or the addition of another sedative medication while on DEX). Secondary endpoints include: time to extubation after initiation of dexmedetomidine, adverse events, highest rate of dexmedetomidine infusion, undersedation as evidenced by patient agitation, and wasted drug expenditures.□□Results and Conclusion: The retrospective control group has been collected. Prospective data collection is still ongoing.

Learning Objectives:

Discuss the major causes for dexmedetomidine failure for ventilator weaning and treatment strategies to minimize these risks.

Describe the comparison of dexmedetomidine failure rates before and after the implementation of a dexmedetomidine protocol.

Self Assessment Questions:

Risk factors for dexmedetomidine failure due to hypotension and bradycardia include:

A Omission of an initial bolus dose
B: Longer titration intervals (≥30 minutes)
C: Too small of an initial starting dose
D: Baseline hemodynamic instability

Risk of dexmedetomidine failure due to agitation is DECREASED when:

A Previous sedatives are turned off immediately upon DEX initiation
B DEX is discontinued prior to extubation
C Previous sedative agents are overlapped with DEX for 30 minutes
D Utilizing DEX intravenous bolus doses for acutely agitated patients

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-433 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF PIPERACILLIN/TAZOBACTAM AND LEVOFLOXACIN UTILIZATION IN A RURAL COMMUNITY HOSPITAL

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Purpose: Broad-spectrum antibiotics are frequently prescribed for empiric coverage of numerous infections before culture and sensitivity (C&S) reports are received. Once diagnostic test results are obtained, antibiotics may need to be deescalated or altered to better target the infecting organism. Streamlining presents one of the best opportunities where a pharmacist can encourage appropriate antibiotic use, limit the development of bacterial resistance, and improve patient care. To address the issue of antibiotic resistance and to promote antimicrobial stewardship, the American Society of Health-System Pharmacy (ASHP) collaborated with the Center for Disease Control (CDC) and other healthcare organizations to endorse the CDCs Joint Statement on Antibiotic Resistance to improve antibiotic use. The objective of this study is to assess if broad-spectrum antibiotics are appropriately streamlined after C&S results are finalized and to optimize therapy and pharmacy resources in a rural community hospital. Methods: A retrospective chart analysis was conducted to determine if empiric antibiotic selection was appropriately being streamlined. Patients were randomly selected if they received a STAT or NOW dose of intravenous levofloxacin or piperacillin/tazobactam. The following data were collected from patient specific charts: patient information, indication for empiric antibiotic therapy, prescriber, C&S, initial antibiotic therapy, concurrent antibiotic(s), any change of antibiotic therapy, length of therapy, and time between availability of finalized C&S and revision of the antibiotic regimen. The results of this study will be used to expand areas for pharmacist intervention in promoting antimicrobial stewardship.

Results: Data collection and analysis is ongoing. Conclusions: Final results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the benefits of antibiotic streamlining.

Describe methods by which a pharmacist in a rural community hospital with limited resources can incorporate antimicrobial knowledge to reduce the development of bacterial resistance and improve patient care.

Self Assessment Questions:

1.Antibiotic streamlining is most accurately described as:

A Discontinuing antibiotic therapy

B: The process of converting patients from a broad spectrum antibiot

C: Initiating empiric antibiotic therapy

D: The process of comparing different antibiotic spectra

When does CMS recommend that a mechanism be put into place to prompt clinicians to review antibiotic courses of therapy?

A 12 hours

B 7 days

C 96 hours

D 72 hours

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-698 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATION USE EVALUATION OF HEPARIN INFUSIONS IN PEDIATRIC PATIENTS

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Purpose: A recent study has shown that sub therapeutic dosing of unfractionated heparin (UFH) did not reduce catheter-related thrombus formation in infants. This project is to evaluate the utilization of continuous infusions of UFH in pediatric patients. The primary objective is to identify the effective dose of UFH by identifying how many patients were on a sub therapeutic dose of UFH, the reason for use and to identify complications including thrombus. Methods: As a quality improvement project, this study is exempted from Institutional Review Board approval. A retrospective single center medication use evaluation (MUE) will be conducted to evaluate the usage of continuous infusions of UFH in children from July 1, 2011 to June 30, 2012. Electronic medical record reports will be used to identify patients who were receiving UFH and to collect data from the period above. Also, to identify patients who were receiving UFH and have the diagnosis of suspected thrombosis by using ICD-9 codes from the time period above. Exclusion criteria: patients over 18-year-old, prosthetic devices (such as mechanical valves, ventricular assist devices, Berlin heart), known coagulopathy or hyper coagulable state, and history of clinically significant bleeding, catheter clots treated with alteplase. In addition, the project will attempt to identify the most effective prophylactic dose of UFH to prevent thrombosis in pediatric patients. The retrospective MUE and results from the literature review will be used to identify the effective dose of UFH.

Results/Conclusion: Data collection is in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the challenges in preventing catheter-related thrombus formation in pediatric patients.

List significant consequences from catheter-related thrombus in pediatric patients.

Self Assessment Questions:

What are the challenges in preventing catheter-related thrombus formation in pediatric patients?

A There are numerous of pharmacotherapeutic agents available for p

B: There are no national guidelines on the effective dose of unfractio

C: Unfractionated heparin is incompatible with numerous of medicatic

D: Both A and B

Which of the following is a significant consequence of catheter-related thrombus?

A Catheter removal

B Line infection

C Pulmonary embolism

D A and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-436 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF ROCURONIUM AND SUCCINYLCHOLINE ON SEDATION INITIATION FOLLOWING RAPID SEQUENCE INTUBATIO

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Purpose: The intent of this study is to evaluate the time to continuous analgesia and sedation following rapid sequence intubation (RSI) in patients presenting to the emergency department (ED). Succinylcholine and rocuronium are two of the most frequently used paralytics for RSI. While both produce paralysis, they work via different mechanisms and have differing durations of action, 5 to 10 minutes and 30 to 60 minutes, respectively. With succinylcholine being on shortage in recent years, a shift has been made to the increased use of rocuronium. We believe this shortage may have compromised the physicians approach, leading to a delay in time to continuous sedation given the longer duration of action of rocuronium. This delay may lead to negative outcomes such as additional sedative requirements, increased hospital length-of-stay or intensive care unit length-of-stay.□□Methods: Data will be collected from February 1, 2008- September 1, 2012 in patients presenting to the ED requiring endotracheal intubation. To be included, patients must be 18 years of age and have required intubation in the ED. Exclusion criteria include age less than 18 years old, pregnancy and those patients intubated prior to arrival to the University of Kentucky ED. Our primary endpoint will be a comparison of time-to-initiation of continuous sedation following intubation between patients that received rocuronium and succinylcholine. Secondary endpoints will include requirement of additional sedation, hospital length-of-stay, intensive care unit length-of-stay and the impact of an emergency medicine pharmacist on time to initiation of post-intubation pain and sedation control. Data for time to sedation will be assessed using the t-test or Wilcoxon rank-sum test, while chi squared or Fischers exact test will assess additional sedation medications.□□Results: Pending data analysis□□Conclusions: Pending data analysis and interpretation

Learning Objectives:

Describe the pharmacokinetic differences between rocuronium and succinylcholine in regards to rapid sequence intubation

Describe the impact of paralysis with inadequate sedation in acutely ill patients

Self Assessment Questions:

Succinylcholine is a first-line agent for neuromuscular blockade in rapid sequence intubation due to which of the following reasons?

A Stable pharmacokinetic profile

B: Short duration of action

C: Easy reversibility following completion of procedure

D: Weight-independent dosing

Critical care literature has shown that inadequate sedation following endotracheal intubation has been shown to increase the risk of which of the following?

A Self-extubation

B Hypercoagulability

C Myocardial infarct

D All the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-816 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF POINT OF CARE TESTING ON DRUG THERAPY PROBLEM DETECTION IN MEDICATION THERAPY MANAGEMENT

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Purpose: One of the major barriers to providing medication therapy management (MTM) in the community setting is the lack of access to patient clinical data, including laboratory values. Pharmacists in the community setting generally have to rely on other providers to communicate clinical and laboratory data. Community pharmacy services have expanded to offer health screenings and other wellness services, including point-of-care (POC) testing. The purpose of this study is to determine the impact on the number of drug therapy problems detected when POC testing is incorporated into a Comprehensive Medication Review (CMR). □Methods: Six pharmacies have been randomized to either a control or intervention location. The MTM pharmacist at all locations will provide a CMR according to the standard of care for Walgreens to patients meeting study eligibility criteria (i.e., adult, not pregnant, diagnosed with diabetes and/or dyslipidemia without available recent laboratory data). In addition, intervention locations will offer POC testing to those meeting study eligibility criteria. □This protocol has been approved by the Purdue University Institutional Review Board (IRB). Data collection began in January 2013. The goal sample size to detect a mean difference of 1.5 drug therapy problems with 90% power is 120 patients (60 in each group). Based on Walgreens MTM patient volume, we anticipate that approximately five months is needed to complete data collection. □The primary outcome is the mean number of drug therapy problems identified during the CMRs and the two groups will be compared using an independent sample t-test and multivariate regression techniques as appropriate. □Preliminary Results: Data collection is in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference. □Conclusion: We anticipate these results will be helpful in determining how POC testing can enhance MTM services in community pharmacy.

Learning Objectives:

Identify the need for effective MTM services in the community pharmacy setting.

Describe the potential barriers to detecting the maximum number of drug therapy problems during a CMR.

Self Assessment Questions:

1.Annually, at least ____ of costs related to ambulatory adverse drug events are estimated to be preventable:

A 10%

B: 25%

C: 40%

D: 60%

2.Which of the following are potential barriers to providing effective interventions based on laboratory information?

A Physician denial or failure to send laboratory values

B Laboratory values are not recent

C All laboratory tests have not been completed

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-434 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A SYSTEMATIC EVIDENCE REVIEW OF VANCOMYCIN DOSING AND MONITORING IN BURN PATIENTS

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Vancomycin pharmacokinetics are significantly altered following recent burn injury. Specifically, vancomycin clearance increases resulting in a possible 50-80% increase in the total daily dose required to achieve adequate serum concentrations. Additionally, wide interpatient variability in vancomycin pharmacokinetics in this population necessitates close and frequent monitoring of vancomycin serum concentrations.□Objectives: To systematically collect and evaluate published data regarding vancomycin pharmacokinetic alterations in burn patients and evidence-based recommendations for dosing and/or monitoring of vancomycin in burn patients, and to identify areas for future research on this topic.□Methods: A systematic review of literature from 1/1/1966 to 11/15/2012 was conducted through Medline, OVID, CINAHL, Iowa Drug Information Service, and EBSCO. For inclusion, studies must have been published in English, included human subjects with at least a 10% total body surface area burn receiving intravenous vancomycin as empiric or targeted antimicrobial therapy, and reported vancomycin serum concentration(s). □Results: Database searches returned a total of 130 titles for review. Twelve studies met our a priiori criteria for inclusion in data analysis. The most common dosing regimens were 5 - 20 mg/kg/dose given every 6 - 8 hours. Mean peak and trough concentrations were 21.2 4.4 mg/L and 7.24 1.5 mg/L, respectively. Twelve and one-half percent of reported trough concentrations were within the currently recommended range of 10 - 20 mg/L. All studies recommended close monitoring of vancomycin trough concentrations in burn patients.□Conclusion: Based on our review, it is recommended that burn patients with a creatinine clearance >100 mL/min be initiated on vancomycin 40-45 mg/kg/day every 8-hours. Monitoring a trough concentration is recommended prior to the administration of the fourth dose, allowing for earlier dose adjustments to more rapidly achieve target serum concentrations. Future research opportunities include specific vancomycin dosing and monitoring strategies and the utility of vancomycin loading doses in burn patients.

Learning Objectives:

State general pharmacokinetic changes observed in burn patients

Explain the importance of monitoring vancomycin in burn patients

Self Assessment Questions:

1.Which of the following represents an important reason to obtain adequate vancomycin serum concentrations in burn patients?

A Methicillin-resistant isolates of Staphylococcus aureus and coagula
B: Approximately 75% of mortality in burn patients is related directly t
C: Achievement of target vancomycin trough levels (15-20 µg/mL) wit
D: All of the above.

Which of the following statements correctly describes typical changes in vancomycin pharmacokinetics in burn patients?

A Increased vancomycin volume of distribution
B Decrease vancomycin hepatic clearance
C Increased vancomycin renal clearance
D Changes in vancomycin protein binding

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-435 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PEDIATRIC EQUATIONS FOR CALCULATING ESTIMATED GLOMERULAR FILTRATION RATE AND THE EFFECT ON DRUG DOSING: ARE WE DOING OUR BEST?

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Purpose□Glomerular filtration rate (GFR) is regarded as the most useful indicator of kidney function. Serum creatinine is used as a surrogate marker in equations for calculating estimated GFR. For the pharmacist, use of this surrogate marker to calculate estimated GFR is critical for dose optimization of nephrotoxic medications and elimination of medications by an impaired or failing kidney. The original bedside Schwartz formula, updated bedside Schwartz formula, and Cockcroft-Gault formula are all current options for the pediatric population. To improve drug therapy outcomes, validation of the updated bedside Schwartz formula for dose optimization of nephrotoxic and renally eliminated drugs is warranted. □□Methods□This retrospective cohort analysis will identify patients using the electronic health record. Patients between the ages of 1 and 18 years with a measured nuclear medicine GFR and serum creatinine measurement within twenty-four hours of nuclear medicine GFR will be included to validate the accuracy of the original bedside Schwartz formula, updated bedside Schwartz formula, and Cockcroft-Gault formula. After formula validation, patients between the ages of 1 and 18 years with an estimated GFR less than or equal to 70 mL/min will be identified. For identified patients, estimated GFR will be calculated using the original bedside Schwartz formula, updated bedside Schwartz formula, and Cockcroft-Gault formula to determine if statistically significant differences exist. Based on estimated GFR values that are calculated using the three equations, variation in nephrotoxic and renally eliminated drug dosing will be evaluated.□□Results□Data collection is currently ongoing.□□Conclusion□Conclusions will be presented at the 28th Annual Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss currently used formulas available for calculating estimated glomerular filtration rate in pediatric patients

Explain variation in dosing of nephrotoxic and renally eliminated medications with available formulas for calculating estimated glomerular filtration rate

Self Assessment Questions:

Serum creatinine values determined by enzymatic assays are . . .

A less specific than the Jaffe method previously used to measure se
B: more specific than the Jaffe method previously used to measure s
C: appropriate for use with the original bedside Schwartz formula dev
D: not used in pediatric equations for calculating glomerular filtration

Use of the updated bedside Schwartz formula for calculation of estimated glomerular filtration rate will in general result in

A no change in doses of nephrotoxic and renally eliminated medicati
B decreased doses of nephrotoxic and renally eliminated medication
C increased doses of nephrotoxic and renally eliminated medications
D no change or decreased doses of nephrotoxic and renally eliminat

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-437 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIBING PRACTICES FOR LONG-ACTING INJECTABLE ANTIPSYCHOTICS IN A COMMUNITY MENTAL HEALTH CENTER AND THE UTILIZATION OF ACUTE CARE SERVICES

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Purpose□Long-acting injectable (LAI) antipsychotics were developed in order to maintain more consistent blood drug concentrations and decrease the frequency of administration, with the thought that LAI antipsychotics would replace the daily oral antipsychotic dosage form. Observations in clinical practice have revealed variations in prescribing LAI and oral antipsychotics simultaneously, bringing into question the actual use of the various antipsychotic dosage forms. Additionally, because an oral antipsychotic is often used for adjunct symptom control with a LAI antipsychotic as the backbone of therapy, information on the use of acute care services by those patients requiring dual therapy is needed.□□Methods□Prescribing practices of Midtown Community Mental Health Center providers for LAI and oral antipsychotics will be analyzed from January 1, 2012, to May 31, 2012. Those included in the study are patients 18 years of age and receiving a long-acting injectable antipsychotic available on the market during the data collection period. Exclusion criteria include active prisoner status. Data collection will include demographic information (age, gender, race, diagnosis), specifics of LAI and oral antipsychotic treatment (medication name, dose, and frequency), and description of acute care service use (reason for use, length of stay, and if and how the medication regimen was changed).□□Results□Pending.

Learning Objectives:

Explain the theory and risks/benefits of using long-acting injectable antipsychotic therapy.

Describe the prescribing practices of long-acting injectable and concomitant oral antipsychotics at Wishard Health Services and the relationship to acute care service use.

Self Assessment Questions:

Why may a provider choose to use a long-acting injectable antipsychotic?

A Ensure continued bioavailability

B: Ideal for short-term use

C: Decreased adherence

D: Always completely replaces the use of oral therapy

Complications that may arise from using concomitant long-acting injectable and oral antipsychotic therapy include:

A Improved medication adherence

B Increased side effect burden

C Decreased A1c

D Increased gastrointestinal motility

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-439 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING EFFECT OF A NOREPINEPHRINE DOSING PROTOCOL ON ATTAINMENT OF GOAL MEAN ARTERIAL PRESSURE IN SEPTIC SHOCK PATIENTS ADMITTED TO THE MEDICAL INTENSIVE CARE UNIT

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Purpose:□The purpose of this study is to evaluate the effect of implementation of a norepinephrine dosing protocol on time to attainment of goal mean arterial pressure, norepinephrine dosing, duration of therapy, and need for additional vasopressors in patients with septic shock.□□Methods:□This study is a retrospective, single-center, quasi-experimental study looking at effect of implementation of a norepinephrine (NE) dosing protocol in the medical intensive care unit (MICU). It includes adult patients who were admitted to the MICU and initiated on NE for septic shock between October 2010 and May 2013. Patients will be excluded if NE was initiated outside of the MICU, or if initiated on another vasopressor prior to NE. The primary objective of this study is to evaluate effect of a NE dosing protocol on time to first goal MAP. We will also evaluate effect on other aspects of vasopressor requirements, such as maximum infusion rate, duration of therapy, and need for additional vasopressors.□□Results/Conclusion:□To be presented.

Learning Objectives:

Recognize key concepts pertaining to achievement and maintenance of hemodynamic goals in patients with septic shock.

Identify key concepts pertaining to vasopressor dosing in septic shock.

Self Assessment Questions:

Which of the following statements are true?

A Vasopressors should be initiated in septic shock patients prior to a

B: Early attainment of hemodynamic goals is associated with a decre

C: Vasopressors are not necessary in patients with septic shock, bec

D: A and B are true.

Which of the following statements are true?

A Obese patients require a higher norepinephrine dose on average t

B Initial norepinephrine dosing and speed of subsequent titration is r

C There is currently a limited literature to guide optimal dosing and ti

D B and C are true.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-438 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF ADVERSE BLEEDING EVENTS IN PATIENTS ON DABIGATRAN OR RIVAROXABAN FOR STROKE PREVENTION IN PATIENTS WITH ATRIAL FIBRILLATION

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Purpose: Dabigatran and rivaroxaban are new oral anticoagulants used for the prevention of stroke and systemic embolism in patients with atria fibrillation. In terms of safety and efficacy, each agent has been compared separately to warfarin, however, little is known about the comparison between the two new agents. Identifying the incidence of bleeding in patients on dabigatran or rivaroxaban may be beneficial in guiding the selection of the newer anticoagulant in patients with non-valvular atrial fibrillation. The primary objective of this study is to identify the incidence of bleeding between groups. Methods: This is a retrospective cohort study of hospitalized patients at Rush University Medical Center who received either dabigatran or rivaroxaban between December 2011 and November 2012. Patients were enrolled in the stud if they had a diagnosis of atrial fibrillation and were started on dabigatrar or rivaroxaban for stroke or systemic embolism prevention and had at least one follow-up visit post-initiation of therapy. Patients were excluded if they had any other indication for anticoagulation, a contraindication to use of any of the agents or were started on therapy prior to the specified time period. Results/Conclusion: Research is currently in the data collection phase. Results and conclusion will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the incidence of bleeding between dabigatran and rivaroxaban as reported in the RE-LY and ROCKET-AF trials.

Recall the definition of major bleeding referenced in previous landmark studies involving Dabigatran and Rivaroxaban.

Self Assessment Questions:

As reported in the RE-LY and ROCKET-AF trials, the combined incidence of major and non-major bleeding associated with dabigatran and rivaroxaban were:

A 18.1% and 16.4%, respectively
B: 16.4% and 20.7%, respectively
C: 18.1% and 20.3%, respectively
D: 20.7% and 20.3%, respectively

The criterion used to define major bleeding in previous studies was?

A A reduction in hemoglobin of at least 2 g/dL
B Transfusion of at least 2 units of blood
C Symptomatic bleeding in a critical area or organ
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-817 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-LED TASK FORCE ON SAFE OPIOID USE IN A COMMUNITY HOSPITAL

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Purpose: The Joint Commission issued a Sentinel Event Alert for the safe use of opioids in hospitals on August 8, 2012 and recommended the involvement of a pharmacist to help educate clinicians, endorse best practices, and improve safety. The objective of this study is to assess the impact of a pharmacist-led task force on safe opioid use in a community hospital to improve patient safety by reducing adverse event and increasing prescriber and patient education. Methods: The study protocol was approved by the Institutional Review Board at Blanchard Valley Hospital. Inclusion criteria are patients hospitalized who have been prescribed and administered at least 3 doses of a high-risk opioid medication in a 24 hour period or continuously administered a high-risk opioid medication (i.e., PCA) and are at least 18 years of age. Hospice patients are not eligible for inclusion. High-risk opioids have been defined as methadone, fentanyl, hydromorphone (IV only), meperidine, and morphine (IV only). The hospitals electronic medical record system will be used to identify patients who have been prescribed a high-risk opioid. After inclusion, a second-level chart review will be completed by a pharmacist who will screen patients for respiratory depression risk factors and provide recommendations to prescribers. Nursing staff will receive computer based training on opioid-induced respiratory depression and sedation as prepared by the primary author. Nursing policies will be updated to include appropriate monitoring parameters when administering an opioid. Patients (or caregivers) will be educated and provided written instructions on using opioids upon hospital discharge. Primary study outcomes have been identified as the number of rapid responses and adverse drug reactions related to the use of high-risk opioid medications after study implementation compared to data from the previous year. Results/Conclusions: Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify characteristics of patients who are at higher risk for opioid-induced respiratory depression and sedation.

Describe measures that can be taken to avoid opioid-related adverse drug events.

Self Assessment Questions:

Which of the following are characteristics of patients who are at higher risk for opioid-induced respiratory depression and sedation?

A Nonsmoker
B: Sleep disorder
C: Younger age
D: Female gender

Opioid-related adverse drug events may be reduced by

A Screening patients for respiratory depression risk factors
B Using a multimodal treatment plan to manage pain
C Consulting a pharmacist when converting from one opioid to anoth
D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-818 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF GENDER DIFFERENCES ON MEDICATION NON-ADHERENCE IN HEART FAILURE PATIENTS

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Purpose: Approximately half of medications prescribed for chronic disease states, including heart failure (HF), are not taken as prescribed. Non-adherence to medication therapy is associated with poor health outcomes, including increased hospitalizations, morbidity, mortality, and healthcare costs. Since 1984, literature has shown increased cardiovascular deaths in female patients. The purpose of this study is to assess the role of gender differences in medication non-adherence among patients with HF. Methods: This prospective, observational study was submitted for approval to the Institutional Review Board before implementation. The electronic medical record at the University of Chicago Medical Center will be utilized to identify patients admitted between 1/21/2013 and 3/31/2013 to a general cardiology service with acute decompensated HF, with an existing HF diagnosis. Patients will be excluded if they are less than 18 years of age, have a ventricular assist device, had an orthotopic heart transplant, have dementia, are pregnant, are incarcerated, or live in a long-term care or assisted living facility. Adherence will be assessed through a validated survey, after obtaining informed consent within 72 hours of admission. The following data will be collected: patient demographics, past medical history, medications, readmission rates, rates of medication adherence, and barriers to appropriate medication use. Patients will receive discharge medication counseling and a phone call thirty days after discharge to assess readmissions for HF exacerbations. The primary endpoint is the percentage of male and female patients adherent to their HF medications upon hospital admission. Secondary endpoints include the proportion of medications taken appropriately, barriers to appropriate medication use, and readmission rates within thirty days. Results/Conclusions: Data collection is currently ongoing. Preliminary results will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the impact of medication non-adherence among patients with heart failure on rates of hospitalization, mortality, and healthcare-related costs.

Identify gender-specific barriers to appropriate medication use among patients with heart failure.

Self Assessment Questions:

Which of the following is an indirect method to assess medication adherence?

A Pill counts

B: Patient questionnaires

C: Biologic serum monitoring

D: Serum concentration monitoring

Which of the following is a condition-related factor affecting medication adherence?

A Pill burden

B Poor communication

C Lack of continuity of care

D Asymptomatic chronic disease

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-440 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SLEEP INDUCING MEDICATIONS AS A CONTRIBUTOR TO ADVERSE EVENTS IN THE ELDERLY

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Purpose: Benzodiazepines, first generation antihistamines, sedative hypnotics, and tricyclic antidepressants are often used for the induction of sleep. Patients 65 years of age and older are at a high risk for falls, delirium, cognitive decline, and functional decline when receiving these medications. Alternative therapies, including aromatherapy, massage, and relaxation techniques, may be used as substitutes for medications i promoting sleep in the elderly. The purpose of this project was to develop a behavioral intervention protocol that reduced the use of sleep medications in elderly patients, enabling an increase in patient safety and a decrease in related adverse events. Methods: Data was retrospectively obtained for patients who experienced a fall during their hospitalization from August 2011 through December 2012. Medications at the time of the fall were examined for the prevalence of medication induced falls. The incidence of delirium in hospitalized elderly patients was also examined during this timeframe. An alternative sleep protocol utilizing nonpharmacologic sleep alternatives was created and implemented on the acute care for the elderly (ACE) floor with the help of the hospitalist, nursing, and pharmacy staff. Data from the time of implementation regarding falls and onset of delirium is being collected and will be used to develop system wide changes regarding medication use in elderly patients. Results/Conclusions: Data collection is in progress; results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify medications used for sleep induction in patients 65 years of age and older that are associated with adverse outcomes.

List alternative methods that may be used for induction of sleep.

Self Assessment Questions:

Which of the following medications used for sleep induction is problematic in patients 65 years of age or older?

A Melatonin

B: Mirtazapine

C: Trazodone

D: Zolpidem

Which of the following methods may be used as an alternative for sleep induction in patients 65 years of age or older?

A Administration of a benzodiazepine

B Administration of a sedative hypnotic

C Administration of a tricyclic antidepressant

D Administration of lavender aromatherapy

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-819 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF A PHARMACIST DRIVEN VITAMIN D SUPPLEMENTATION PROTOCOL

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Purpose: The American Academy of Pediatrics (AAP) provided recommendations for vitamin D supplementation in infants in 2008; breast fed infants and infants receiving less than one liter of formula should be supplemented with 400 international units of vitamin D daily. Currently at Helen DeVos Childrens Hospital (HDVCH), our compliance with these recommendations at discharge is approximately 48.5%. The purpose of this project is to improve appropriate vitamin D supplementation in infants at discharge with a goal compliance of 80% after implementation of the pharmacist driven protocol. Methods: A retrospective chart review was performed for patients less than 1 year of age from October 1, 2012 - December 31, 2012 admitted to the general pediatric floor (n=66). Patients were assessed for appropriate vitamin D supplementation at discharge to determine our current compliance with the AAP recommendations. Pharmacy and Therapeutics approval was granted for a pharmacist driven vitamin D supplementation protocol on the general pediatric floors to begin in January 2013. After implementation of the pharmacist driven vitamin D supplementation protocol, a retrospective chart review will be performed to assess the improvement in vitamin D supplementation at discharge. The following data will be collected: age, length of stay, nutrition (breast milk or formula), amount of formula per day, prior to admission use of vitamin D supplementation, and vitamin D supplementation on discharge medication list. Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the American Academy of Pediatrics (AAP) recommendations for vitamin D supplementation in infants.

Identify pediatric patients who meet criteria for supplementation with vitamin D.

Self Assessment Questions:

Which of the following are AAP recommendations for vitamin D supplementation?

A Infants less than 12 months of age

B: Infants consuming less than 1L of formula per day

C: Breast fed infants

D: Both B & C

Which of the following patients admitted to the general pediatric floor should be receiving vitamin D supplementation?

A 4 month old female predominantly receiving breast milk, but suppl

B 2 week old male with admitted for failure to thrive receiving 2 ounc

C 5 month old male receiving 6 ounces of formula every 4 hours

D A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-699 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF BIVALIRUDIN USE IN PATIENTS UNDERGOING VENTRICULAR ASSIST DEVICE IMPLANTATION

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Background: Ventricular assist devices (VADs) are an option for patients with decompensated end-stage heart failure. Thrombosis risk is high with a VAD; however, an increased risk of bleeding post implantation exists from multiple factors including activation of fibrinolysis. Clinical trials used heparin as a bridge to oral anticoagulation therapy (OACT) post VAD implantation, but one observational trial argues that postoperative bridging to OACT may not be necessary. At the Cleveland Clinic, a recent practice change has seen bivalirudin used in patients post VAD implantation as a bridge to OACT. Currently, no literature supports bivalirudin use for this indication; thus, the safety and efficacy of this practice is unproven. Objective: To assess the incidence of thrombosis and bleeding, as well as the cost with the use of bivalirudin as a bridge to OACT after VAD implantation compared to a historical control. Methods: This was a non-interventional, retrospective, matched historical control (2:1) medical record review. The primary and secondary endpoints of thrombosis and bleeding up to 30 days post VAD implantation were evaluated, respectively. Results: The bivalirudin and historical control cohorts included 35 patients and 70 patients, respectively. There were no statistically significant differences in thrombosis [7/35, (20%) vs. 20/70, (28.6%); P=0.34] or bleeding [10/35, (28.6%) vs. 16/70, (22.9%); P=0.52] rates between the bivalirudin and control group. Also, a substantial pharmacoeconomic cost was incurred using bivalirudin as a bridge to OACT. Conclusion: There was no significant difference using bivalirudin as a bridge to OACT in reducing thrombosis or bleeding rates up to 30 days post VAD implantation compared to historical control group. Prospective trials comparing bivalirudin to heparin and/or no parenteral bridging for longer than 30 days should be undertaken to assess the efficacy and safety of this practice.

Learning Objectives:

Explain the rationale for not using parenteral anticoagulants as a bridge to oral anticoagulation

Discuss the clinical and pharmacoeconomic impact of using bivalirudin as a bridge to oral anticoagulation post VAD implantation.

Self Assessment Questions:

Which of the following statements explains why bridging to oral anticoagulation after ventricular assist device (VAD) implantation may not be necessary?

A Patients are in a fibrinolytic state post-operatively

B: Thrombotic risk is high even on therapeutic anticoagulation

C: The high shear environment of the VAD initiates platelet activation

D: Blood velocity fluctuates throughout the VAD which may cause blo

Which of the following are advantages of using bivalirudin over heparin as a bridge to oral anticoagulation?

A Shorter half-life allowing quicker dose titration

B Decreased risk of heparin-induced thrombocytopenia

C More predictable pharmacokinetics and anticoagulation effect

D All of the above

Q1 Answer: A Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CLINICAL INTERVENTION DOCUMENTATION TOOL IN THE COMMUNITY LIVING CENTER AT A VETERANS AFFAIRS FACILITY

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Clinical pharmacy specialists are providing interventions in the care of patients with respect to recommendations for modifications of drug therapy. In many health systems, these interventions are being documented outside of patients' medical record, in a heterogeneous manner, if they are being documented at all. According to the consensus recommendations document from ASHP's Pharmacy Practice Model Summit, pharmacists must be allowed the opportunity to document recommendations and follow-up notes, specifically in patients' medical records; another recommended automated capture of these interventions directly from the medical record. The national Veterans Affairs electronic medical record does not have a standardized method by which to document pharmacists' interventions. Locally, some pharmacists store interventions in a home-grown system outside of the patients' electronic medical record. In order to comply with the aforementioned recommendations, a pharmaceutical care documentation tool was obtained from another institution and then sufficiently modified to suit the interventions applicable for the Community Living Center within a Veterans Affairs hospital. After a review of the literature, assembling the preferences of pharmacy staff, and working with clinical applications coordinators regarding optimization of technological resources, a new tool was created that could be utilized within the Veterans Affairs electronic medical record at our facility. This tool will be utilized by a clinical pharmacy specialist providing care and interventions to patients in that area of practice. The types and numbers of clinical interventions will be recorded. In order to determine how compliance with the recommendations from the Pharmacy Practice Model Summit will impact pharmacist's workload, time studies and process flow maps will be generated.□□Results:□Results to be presented.□□Conclusions:□Conclusions to be presented.

Learning Objectives:

Describe the process by which subjective measures of patient care can be made objective

Identify methods of collaborating with an interdisciplinary team to facilitate creation of optimal technology resources

Self Assessment Questions:

Why is the documentation of interventions important?

A Patient care activities can not be done without documenting interv
B: Providers look for pharmacists to make documentations for them
C: Objective measures provide concrete information for future project
D: Patients learn more about how their providers and pharmacists are

When integrating an existing technology into a new user system, what is most important?

A To in-service the players on a frequent basis to maintain knowledg
B Gather information from the players and the previous users prior to
C To follow the players closely to determine if they are using the tech
D To delay implementation until players agree on all aspects of the t

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-700 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

MICROVASCULAR TOXICITIES OF GRAFT-VERSUS-HOST DISEASE PROPHYLAXIS AFTER HEMATOPOIETIC CELL TRANSPLANTATION

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Purpose: Graft-versus-host disease (GVHD) can cause significant morbidity and mortality post allogeneic hematopoietic cell transplantation (HCT). It is an immune-mediated response that can occur even in the presence of human leukocyte antigen (HLA) matched HCT. GVHD can occur in both an acute and chronic form. Prevention of acute GVHD is through prophylaxis by lymphocyte depletion of the donor graft or by pharmacologic means. Pharmacologic GVHD prophylaxis options include standard of care with methotrexate, an antimetabolite, plus a calcineurin inhibitor, such as cyclosporine, or newer options such as tacrolimus, a calcineurin inhibitor, and sirolimus, an inhibitor of mammalian target of rapamycin. Analysis of the microvascular toxicities associated with tacrolimus and sirolimus GVHD prophylaxis has not been directly compared to the standard of care GVHD prophylaxis. The purpose of this study is to compare the microvascular toxicities associated with tacrolimus and sirolimus GVHD prophylaxis with methotrexate and calcineurin inhibitor GVHD prophylaxis in patients with acute myeloid leukemia (AML) or myelodysplastic syndrome (MDS) following a HCT. Toxicities are defined as diffuse alveolar hemorrhage (DAH), sinusoidal obstructive syndrome (SOS), and thrombotic microangiopathy (TMA). □□Methods: A retrospective review of patients with acute myelogenous leukemia AML/MDS in complete remission who received an allogeneic HCT between 2002 and 2012 was conducted. Patients were between 18 and 65 years old at the time of HCT and received either methotrexate and a calcineurin inhibitor or tacrolimus and sirolimus as GVHD prophylaxis. Patients were excluded if they received a non-myleoablative transplant or reduced-intensity conditioning regimens. Patients were also excluded if they were treated with posaconazole or voriconazole while receiving sirolimus GVHD prophylaxis. DAH documented as secondary to mechanical ventilation was also excluded. □□Results/Conclusions: To be discussed upon completion of data collection and analysis at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List pharmacologic regimens for acute graft-versus-host disease prophylaxis

Discuss microvascular toxicities associated with pharmacologic graft-versus-host disease prophylaxis.

Self Assessment Questions:

Which of the following is considered a newer option for pharmacologic acute GVHD prophylaxis?

A Methotrexate monotherapy
B: Methotrexate + cyclosporine
C: Tacrolimus + methotrexate
D: Tacrolimus + sirolimus

Which microvascular toxicity is associated with an inflammatory process

A Thrombotic microangiopathy
B Diffuse alveolar hemorrhage
C Sinusoidal obstructive syndrome
D Veno-occlusive disease

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-442 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF A REVISED HEPARIN DOSING PROTOCOL FOR PATIENTS UNDERGOING THERAPEUTIC HYPOTHERMIA

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Purpose: Therapeutic hypothermia (TH) improves neurologic outcomes in unresponsive survivors of cardiopulmonary arrest, and is now the standard of care. TH may significantly alter drug metabolism and clearance. A previous study conducted at the Detroit Medical Center (DMC) revealed that patients on intravenous unfractionated heparin (UFH) during TH had significantly altered heparin disposition resulting in supratherapeutic activated partial thromboplastin times (PTT). The DMC recently adopted a modified dosing nomogram for patients on heparin during TH. This study will assess the efficacy of the heparin nomogram during TH in attaining PTTs in the target range of 1.5 to 2 times the baseline and compare the results to patients dosed prior to the implementation of the modified dosing nomogram.□□Methods: This is a retrospective, case-control study of patients on treatment doses of UH during TH post-cardiac arrest. The study will be conducted in the ICU of the 4 adult hospitals within the DMC. Patients must be at least 18 years of age and treated with intravenous UFH during TH post-cardiac arrest. Patients included must be dosed based on the modified heparin dosing nomogram for TH patients. Patient characteristics will be collected such as: demographic information (e.g. age, height, and weight), APACHE, APACHE II score, heparin dosing, body temperatures, and bleeding events. A standard case report form will be utilized for data collection. The systems electronic medical record (EMR) will be used to gather patient information. Safety data will be assessed via adverse event reporting by the medical team, PTTs, and other laboratory and diagnostic testing.□□Results: To be presented at the Great Lakes Pharmacy Resident Conference.□□Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the role of pharmacists in the adjustment of intravenous unfractionated heparin therapy during therapeutic hypothermia.

Identify the impact of therapeutic hypothermia on the pharmacokinetic and pharmacodynamic properties of intravenous unfractionated heparin.

Self Assessment Questions:

How does therapeutic hypothermia affect the pharmacokinetic properties of drugs?

A decreases metabolism, decreases elimination

B: increases metabolism, increases elimination

C: decreases metabolism, increases elimination

D: increases metabolism, decreases elimination

Medication doses in the ICU, such as intravenous unfractionated heparin, generally need to be _____ in patients on therapeutic hypothermia.

A Increased

B Decreased

C Neither increased nor decreased

D Both A and B

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-443 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A RETROSPECTIVE EVALUATION OF SPIRONOLACTONE VERSUS EPLERENONE ON POTASSIUM HOMEOSTASIS AND RENAL FUNCTION

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Purpose: □The mineralocorticoid receptor antagonists (MRAs) spironolactone and eplerenone are utilized in the treatment of resistant hypertension and are approved for the treatment of patients with moderate to severe symptoms of heart failure and reduced left ventricular ejection fraction. Despite recent studies indicating the benefit of MRAs in heart failure therapy, the perceived risk of hyperkalemia often limits optimal use of these agents. Differences in the metabolism and elimination of spironolactone and eplerenone suggest that frequency and severity of hyperkalemia may be different between the MRAs, however direct comparative trials evaluating variation in risk are lacking. The purpose of this retrospective review is to assess the differences between spironolactone and eplerenone on potassium (K) homeostasis and renal function following dose titration and to investigate factors which may predispose to more pronounced changes in serum K and renal function with MRA therapy.□□Methods:□A retrospective chart review will be completed for 170 veteran patients with a prescription for spironolactone or eplerenone between January 2007 and August 2012. Subjects will be matched across comparator groups by age, baseline blood pressure for MRAs prescribed for hypertension, and ejection fraction for MRAs prescribed for heart failure. Primary outcomes include absolute changes in serum K levels and estimated glomerular filtration rate (eGFR) within 3 months of initiation of therapy with either agent. Secondary outcomes include frequency of hyperkalemia (defined as K > 5.0, 5.5, or 6.0mEq/L) , frequency of worsening renal function (defined as defined as a 30 percent decline of eGFR), frequency of change in serum creatinine of greater than 0.5 mg/dL from baseline, and incidence of discontinuation of either agent due to hyperkalemia or renal dysfunction. Subgroup analyses will include patients with or without heart failure, diabetes, hypertension and baseline renal dysfunction (eGFR <60ml/min/m2). □□Results/Conclusions:□The results and conclusion are pending

Learning Objectives:

Identify patients that may benefit from therapy with a mineralocorticoid receptor antagonist.

Describe differences in the pharmacokinetics of eplerenone and spironolactone that may influence frequency and severity of hyperkalemia

Self Assessment Questions:

Spironolactone or eplerenone improve outcomes in which group of patients?

A Patients with New York Heart Association class I heart failure

B: Patients with New York Heart Association class II, III or IV heart fa

C: Patients post-myocardial infarction with normal left ventricular ejec

D: Patients post-cerebrovascular infarct with normal left ventricular ej

Which is true regarding the metabolism and elimination of eplerenone compared to spironolactone?

A Eplerenone has a longer half-life than spironolactone and lacks ac

B Eplerenone has a shorter half-life than spironolactone and lacks a

C Eplerenone has a longer half-life than spironolactone and has acti

D Eplerenone has a shorter half-life than spironolactone and has act

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-444 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING STRESS ULCER PROPHYLAXIS IN CRITICAL CARE PATIENTS

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Purpose:□Critical care patients are often inappropriately started on PPIs and H2RAs for stress ulcer prophylaxis (SUP), or are not re-evaluated when no longer indicated. PPIs are particularly overused, which leads to overutilization in non-ICU patients and failure to discontinue prior to hospital discharge. These agents have both been associated with increased risk of nosocomial pneumonia and an association has been shown between PPIs and Clostridium difficile infection. The purpose of this project is to improve the appropriateness of the agents used in the ICUs for SUP.□□Methods:□A literature evaluation was conducted to assess qualifications for appropriate SUP. Criteria was made for appropriate SUP and approved by the hospitals Critical Care physician group. Pre-intervention data of the pharmacological SUP use was collected in Aurora St. Lukes Medical Centers five ICUs. A pilot where clinical pharmacists assess each patient for appropriateness of SUP and intervene to discontinue when necessary was accepted by the physician group. Resources were created to assist staff pharmacists in implementation. Pharmacists documented interventions made in a month long pilot in one of the five ICU units. The intervention will then be expanded to all of the ICUs and ultimately system-wide. Post-intervention data will be collected in April after implementation in all five hospital ICUs. □□Preliminary Results: □Prior to intervention, 100 ICU patients were followed through their hospital course. Sixty-three patients were on SUP, 25 (40%) of which were not indicated. Twenty-six (41.3% of the 63 patients were continued on SUP at transfer out of the ICU and 10 (15.9%) were prescribed a SUP agent at discharge. □□ In the pilot intervention, 28 recommendations were made to providers to discontinue inappropriate SUP or to switch from a PPI to H2RA if SUP is indicated. Nineteen (67.9%) of the recommendations were accepted.
□□
Conclusions:□Conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify the valid indications that qualify a patient for stress ulcer prophylaxis.

Describe the potential complications associated with use of long term SUP agents.

Self Assessment Questions:

Which of the following is a complication associated with use of Proton Pump Inhibitors?

A ICU stay over one week
B: Pulmonary edema
C: Clostridium difficile infection
D: Helicobacter pylori infection

Which of the following is an independent indication for stress ulcer prophylaxis?

A ICU stay over three days
B Ventilation for over 48 hours
C Hypotension or being treated with vasopressors
D Acute kidney injury

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-701 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACTING PATIENT CARE BY DEVELOPMENT OF A DISCHARGE MEDICATION DELIVERY SERVICE FOR INPATIENTS

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Background:□With the implementation of the Affordable Care Act, health systems across the country are looking for ways to improve patient care. During the hospital discharge process, a customized plan is developed for each patient. This plan often includes follow-up physician appointments, arrangements for rehabilitation, and medication changes. An area this plan may not address is obtainment of chronic or new medications. At Mercy Health Partners, one area identified as an opportunity for improving care during this transition was the development of a program for delivery of discharge medications to the bedside. It has been demonstrated that programs like this improve health outcomes, increase compliance, and raise patient satisfaction scores.
□□
Purpose:□To provide inpatients at Mercy Health Partners, Mercy Campus, the opportunity to have discharge medications delivered to their bedside prior to discharge in order to improve patient care.□□Methods:□This was a prospective, single center, process improvement project which took place from July 2012 - April 2013. A protocol was developed and introduced to one unit at a time by educating case managers and nurses. Patients interested in the program were identified by healthcare team members, and then case managers worked with the outpatient pharmacy to obtain discharge medications. Patients were excluded if they were less than 18 years old, admitted to the intensive care unit, or being discharged to a skilled nursing facility. The primary outcome was the number of prescriptions filled at the outpatient pharmacy. Secondary outcomes included patient satisfaction, employee satisfaction, outpatient pharmacy revenue, and readmission rates as compared to a matched cohort. Surveys were developed to evaluate patient and employee satisfaction, while data for outcomes was collected using computer generated reports.□□Results/Conclusions:□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify reasons patients present to the emergency department after discharge.

Discuss barriers to implementing a bedside medication delivery program

Self Assessment Questions:

Which of the following is a common reason patients return to the hospital after discharge?

A Strong social support
B: Feeling unprepared for discharge
C: Easy to understand discharge instructions
D: High compliance rates to discharge instructions

What was one barrier to implementing a bedside medication delivery program at MHP?

A Lack of support from management
B Insufficient process design
C Difficulty in gaining acceptance from healthcare team members
D There were no barriers to implementation

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-702 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF PREDICTIVE RISK MODEL TO IDENTIFY PATIENTS FOR CARE MANAGEMENT INTERVENTIONS RELATED TO POTENTIAL ADVERSE MEDICATION EVENTS

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Prevalence of drug related hospital and emergency department (ED) admissions in the United States (U.S.) is reported to range from 3 to 12 percent. These medication related events can significantly impact a managed care organization (MCO) and its members. Identifying members at higher risk for ED visits or hospitalizations due to adverse medication events may facilitate the design of more efficient programs by a MCO therefore, improving safety and quality of medical care and decreasing costs. The objective of this study is to identify risk factors for medication related hospitalizations, ED visits and rehospitalizations for a commercial population. This retrospective single cohort study used claims data from Blue Cross Blue Shield of Michigan. Members are required to be less than or equal to 64 years of age and continuously enrolled with at least 1 medical claim from June 1, 2010 to May 31, 2012. Members with at least 1 hospitalization, ED visit or rehospitalization during June 1, 2011 to May 31, 2012 and pharmacy claim 4 months prior to the most recent event are categorized into 1 of 2 groups: (1) medication related (defined by specific International Classification of Diseases, Ninth Revision [ICD-9] diagnosis codes) hospital admission, ED visit, or rehospitalization, or (2) non medication related hospital admission, ED visit, or rehospitalization (control group). Member characteristics such as age, ICD-9 diagnosis codes, chronic conditions, and medications are compared between the groups. This information will be reported as means with standard deviations or frequencies with percentages; logistic regression will be performed to evaluate the association of member characteristics to medication relatec hospitalizations, ED visits and rehospitalizations. Data analysis is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of a managed care organization to use medical and pharmacy data to prevent hospitalizations, emergency department visits, and rehospitalizations.

Identify ways a managed care organization can utilize a predictive risk model to improve the safety and quality of medical care.

Self Assessment Questions:

What is the main driver for improving patient care and reducing health care costs?

A Affordable Care Act

B: Medicare Prescription Drug, Improvement, and Modernization Act

C: Hatch-Waxman Act

D: Kefauver Harris Act

2.What is the primary goal for a managed care organization (MCO) to identify risk factors for hospitalizations, emergency department visits, or rehospitalizations?

A Save money for the managed care organization.

B Improve the health of its members by creating interventions in mec

C To be in alignment with the patient centered medical home and en

D To identify members whose health insurance coverage should be

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-820 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF THE RESOURCES DEVOTED TO THE PRESCRIBING AND MONITORING OF ORAL CHEMOTHERAPY IN OUTPATIENT CLINICS AT A COMPREHENSIVE CANCER CENTER

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Over the past decade therapeutic options for oncology patients have shifted from primarily intravenous chemotherapy to treatment regimens that include only intravenous, only oral, or a combination of both formulations. Oral chemotherapy agents (OCAs) offer many advantages associated with quality of life for the patient. Despite the recognized benefits, the safe and effective use of OCAs requires a substantial investment in resources by the healthcare system. As a Comprehensive Cancer Center, the Arthur G. James Cancer Hospital and Richard J. Solove Research Institute employs a multi-disciplinary approach to prescribing and monitoring oral chemotherapy. This team includes physicians, nurse practitioners, nurses, pharmacists, and medication assistance coordinators. To assess the resources devoted to this process, a focus group, including representatives from each discipline, was conducted to determine the activities performed by each individual that are associated with the prescribing and monitoring c OCAs. Results from this group indicated that activities of clinic nurses and nurse practitioners include preparation of prior authorization paperwork and communication with insurance companies. Pharmacists activities include initial counseling sessions, follow-up visit counseling/refill adherence monitoring, and follow-up phone calls. Medication assistance coordinators activities include the initial assessment of financial need and coordination of applications to manufacturer assistance programs and patient assistance foundations, as needed. A documentation tool was created for each discipline to facilitate accurate recording of the time associated with each activity in the process. Data collection includes direct observation and self-reporting of the time associated with each activity and determination of the 95% confidence intervals of this time. To validate the times documented by providers, the 95% confidence interval of observed time versus self-reported times will also be estimated and time for each discipline will be associated with average salary information to determine the financial investment made by the health system. Outcomes remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

Describe the evolution of oncology therapy from only intravenous agents to a combination of intravenous and oral options.

Review the advantages and potential concerns that surround the prescribing of oral chemotherapy agents.

Self Assessment Questions:

Which of the following is a concern when prescribing oral chemotherapy agents?

A Potential drug/food interactions

B: Patient adherence

C: Handling/disposal of medication

D: All of the above

Which of the following is an advantage of oral chemotherapy agents ove intravenous agents?

A Greater sense of patient control over treatment

B Reduced travel time to and costs of an infusion clinic

C Reduced discomfort associated with IV lines

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-703 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZATION OF BIVALIRUDIN USAGE IN THE CATH LAB GUIDEI BY A BLEEDING RISK SCORING TOOL

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Purpose: Patients undergoing percutaneous coronary intervention (PCI) require procedural anticoagulation, and the American College of Cardiology (ACC) Guidelines do not establish a preferred agent. Bivalirudin has been shown to significantly decrease PCI bleeding complications compared to treatment with unfractionated heparin plus glycoprotein 2b/3a inhibitor and unfractionated heparin monotherapy. Procedural access site also appears to impact the incidence of bleeding. Bivalirudin has not been shown to significantly impact the incidence of ischemic complications compared to unfractionated heparin among biomarker negative PCI patients. However, bivalirudin is significantly more expensive than unfractionated heparin. The ACC guidelines also recommend patients undergoing PCI should be evaluated for risk of bleeding prior to PCI. The primary objective of this project is to utilize a pre-procedural bleeding risk-scoring tool in the Aurora St. Lukes Medical Center (ASLMC) cath lab to improve health care quality by ensuring elective PCI patients at high risk for bleeding are treated with bivalirudin and reduce health care costs by treating elective PCI patients at low risk for bleeding with unfractionated heparin. □□

Methods: A review of the current literature was conducted to evaluate available bleeding risk-scoring tools and the variables each score included. The National Cardiac Data Registry (NCDR) bleeding risk score was selected based on the inclusion of only pre-procedural variables. Baseline anticoagulant utilization and incidence of bleeding complications was evaluated retrospectively. The NCDR bleeding risk score was retrospectively applied to ASLMC PCI patients to confirm it accurately predicts bleeding complications at ASLMC. A paper version o the NCDR bleeding risk score was created and a workflow process was developed to implement the bleeding risk-scoring tool. Interventional cardiologists with high bivalirudin utilization were targeted to pilot the bleeding risk scoring tool. □□Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe a method that can be used to evaluate a patients bleeding risk prior to PCI.

Select a PCI patient population to initially pilot a bleeding risk scoring tool.

Self Assessment Questions:

Literature based bleeding risk scoring tools should be utilized:

A Pre-procedurally to guide PCI anticoagulation selection

B: Post-procedurally to select patients to receive vascular closure de

C: Intra-procedurally to guide ADP (Adenosine diphosphate) receptor

D: Pre-procedurally to identify patients at high risk for HIT (heparin in

To engage providers and closely monitor outcomes, a bleeding risk scoring tool should be initially piloted among what type of PCI patients?

A STEMI (ST-segment Elevation Myocardial Infarction) PCI patients

B NSTEMI (Non-ST-segment Elevation Myocardial Infarction) PCI pa

C UA (Unstable Angina) PCI patients

D Elective PCI patients

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-445 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY, EFFICACY, AND SATISFACTION WITH U-500 REGULAR INSULIN IN VETERANS WITH TYPE 2 DIABETES

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Purpose: To evaluate the safety, efficacy, and patient satisfaction with U-500 regular insulin use in Veterans with type 2 diabetes mellitus (T2DM). U-500 regular insulin is five times more concentrated than U-100 regular insulin and may be useful for patients with very high insulin requirements. □□Methods: Veterans with T2DM prescribed U-500 regular insulin between January 2008 and August 2012 were identified. Subjects who used U-500 insulin for at least six months and had HbA1c available at baseline (within six months of starting U-500 insulin at VAAAHS) were included. Subjects who lacked follow up with HbA1c during the study period, used an insulin pump, were initiated on high dose corticosteroids (defined as >10mg of prednisone or equivalent dose for >14 days), or had U-500 insulin regimen interrupted for >14 days were excluded. Subjects currently prescribed U-500 insulin were contacted by telephone and asked to voluntarily participate in the patient satisfaction and quality of life survey. Primary endpoint was change in HbA1c from baseline (defined as initiation of U-500 insulin) to six months. Secondary endpoints included change in HbA1c from baseline to three and twelve months; assessment of patient satisfaction and quality of life while using U-500 insulin compared to U-100 insulin; change in body weight, total daily insulin dosage, number of insulin injections per day from baseline to three, six, and twelve months; and incidence of hypoglycemia six months before and after initiating U-500 insulin. □□Results/Conclusion: To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the benefits of using U-500 insulin in patients with high insulin requirements.

Discuss the potential risks associated with the use of U-500 insulin.

Self Assessment Questions:

Which of the following characteristics of U-500 insulin may be beneficial to a patient with high insulin requirements?

A U-500 insulin is 5 times more concentrated and requires a smaller

B: Peak effect of U-500 insulin is 2-4 hours while the duration of actic

C: U-500 insulin does not cause hypoglycemia

D: U-500 insulin is associated with weight loss

Which of the following are safety concerns related to the use of U-500 insulin?

A U-500 insulin has unpredictable absorption after injection

B U-500 insulin is 5 times more concentrated than U-100 insulin wh

C Healthcare providers must communicate the U-500 insulin dose in

D The incidence of hypoglycemia is less with U-500 insulin compare

Q1 Answer: A Q2 Answer: B

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Activity Type: Knowledge-based Contact Hours: 0.5

REDUCTION IN AUTOMATED DISPENSING CABINET OVERRIDES POST-EMR IMPLEMENTATION

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Purpose: The Joint Commission Medication Management standard 05.01.01 requires pharmacists to prospectively review all medication orders, except for in an emergent situation. While Automated Dispensing Cabinets (ADC) facilitate the provision of decentralized medication services to patients, system overrides in emergent situations preclude pharmacists from performing a prospective review of medication orders. Enterprise Electronic Medical Records (EMR) can potentially improve pharmacist order verification efficiency and reduce the need for overrides. Thus, the purpose of this study was to determine if the implementation of an enterprise EMR reduces the number of ADC overrides needed. Methods: The history of overrides from May 1 to July 31 was compared in 2011 (pre-EMR) versus 2012 (post-EMR). The twenty highest volume ADC units were examined. Data were excluded from analysis if the ADC transactions involved non-medications or medications that were removed from the override list between May 1, 2011, and July 31, 2012. Total ADC transactions over the three months were used to compare override percentages between each year. Results: Overrides between pre- and post- EMR were reduced from 7.43% to 3.43%. A subset of ten high-alert medications also showed a similar trend, representing 0.70% and 0.38% of all ADC transactions between pre- and post- EMR implementation. As a result of the EMR, profiling capabilities were introduced in the emergency department and procedural areas. Conclusion: An enterprise EMR can substantially reduce the need for overrides through efficient pharmacist prospective review of orders. Profiling capabilities can be beneficial, allowing for more pharmacy control of medication access in outpatient and procedural areas. A major limitation of the study was the inability to account for medications that may have been removed at certain time points while the ADC was in critical override mode. Drug shortages may have also impacted the availability of products between time periods.

Learning Objectives:

Discuss current regulations in regard to prospective pharmacist review o medication orders.

Describe the benefits of an enterprise Electronic Medical Record in reducing overrides.

Self Assessment Questions:

Which hospital accreditation body recommends the prospective review of all medication orders?

A Centers for Medicare & Medicaid Services (CMS)

B: The Joint Commission (TJC)

C: Institute for Safe Medication Processes (ISMP)

D: DNV Healthcare (DNV)

What was the overall impact on overrides after implementation of an enterprise EMR?

A Increased overrides by approximately 2 fold

B Minimal changes to overrides

C Decreased overrides by approximately 2 fold

D Decreased overrides by approximately 4 fold

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-821 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF EMPIRIC SINGLE COVERAGE GRAM-NEGATIVE VENTILATOR ASSOCIATED PNEUMONIA IN AN ACADEMIC, LEVEL 1 TRAUMA/SURGICAL INTENSIVE CARE UNIT

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The 2005 ATS/IDSA treatment guidelines for ventilator-associated pneumonia recommend empiric double gram-negative antibiotic coverage in combination with an agent that has gram-positive activity for patients at high risk for multi-drug resistant pathogens, however, this may not be equally applicable to all patient populations. Current practices at Froedtert Hospital deviate from the ATS/IDSA guideline recommendations and routinely employ single gram-negative coverage. This practice is largely based on routine culture and sensitivity surveillance specific to the SICU which indicates the frequency of multi-drug resistant pathogens is infrequent. This practice is based on surveillance data specific to the surgical/trauma intensive care unit as well as good in vitro cefepime susceptibility to gram-negative pathogens. The objective of the study is to evaluate the clinical appropriateness of empiric single coverage for gram-negative pathogens as compared to traditional empiric double coverage in suspected VAP for the SICU. The primary outcome is to evaluate the match between prescribed antimicrobials and in vitro susceptibility of cultured pathogens compared to the match between a theoretical antimicrobial regimen (piperacillin-tazobactam and ciprofloxacin) based on ATS/IDSA guideline recommendations and in vitro susceptibility of cultured pathogens. A retrospective analysis of patients admitted to the trauma/surgical intensive care unit at Froedtert Hospital who were mechanically ventilated for at least 48 hours prior to receiving empiric antimicrobial therapy for VAP with positive quantitative and semi-quantitative respiratory cultures and also followed the single gram-negative VAP protocol were evaluated. Data analysis and interpretation are currently underway and will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the ATS/IDSA guideline risk factors for multi-drug resistant pathogens causing ventilator-associated pneumonia

Identify the antibiotics commonly used as initial empiric therapy for ventilator-associated pneumonia for patients at risk for multi-drug resistant pathogens

Self Assessment Questions:

Which of the following are risk factors for multi-drug resistant pathogens that cause ventilator-associated pneumonia?

A Antimicrobial therapy in preceding 90 days

B: High frequency of antibiotic resistance

C: Residence in a nursing home or assisted living facility

D: All of the above

Which of the following antibiotics are recommended as initial empiric therapy for ventilator-associated pneumonia in patients with risk factors for multi-drug resistant pathogens?

A Vancomycin

B Moxifloxacin

C Antipseudomonal cephalosporin

D A & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-447 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE IMPACT OF PHARMACIST-LED ANTIMICROBIAL STEWARDSHIP INTERVENTIONS IN ADULTS WITH COMMUNITY-ACQUIRED OR HEALTHCARE-ASSOCIATED PNEUMONIA AT A COMMUNITY HOSPITAL

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Purpose: Community-acquired pneumonia (CAP) and healthcare-associated pneumonia (HCAP) are linked to rising rates of morbidity and mortality in hospitalized patients. These patients are at an increased risk of being readmitted; attempts to reduce readmission rates for certain disease states, including pneumonia, has become a priority for hospitals receiving CMS funding. An important mechanism for optimizing both clinical and financial outcomes in pneumonia patients is the practice of antimicrobial stewardship. Interventions such as intravenous to oral antimicrobial conversions help to reduce costs associated with therapy, while therapeutic de-escalation and timely cessation of treatment helps avoid unnecessary drug exposure and may aid in reducing rates of resistance. The objective of this study is to evaluate whether pharmacist led antimicrobial stewardship interventions result in favorable clinical and economic outcomes, when compared to no pharmacist intervention. Methods: This was a prospective study evaluating stewardship interventions in adult patients diagnosed with either CAP or HCAP. Patients were excluded if they were not admitted or were under observation status, if a diagnosis of pneumonia was not definitive, or if they had an infectious diseases physician on consult. All prospective study patients were identified by a pneumonia order set report on the institution's clinical computer system. Comparisons were made between two patient cohorts, one with pharmacist initiatives and one without. Stewardship interventions included: intravenous to oral conversions, dose optimization, de-escalation of therapy, and recommending timely cessation of therapy. Patient variables collected include age, gender, Charlson score, days with leukocytosis, days with fever, cultures, pneumococcal and influenza vaccination status, length of stay, antibiotic cost, and antibiotics utilized. The primary outcome evaluated will be days of antimicrobial therapy. Secondary outcomes assessed will include: antibiotic cost per patient, intravenous to oral conversions, and length of stay. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify recommended treatment strategies for patients hospitalized with CAP or HCAP

List the various antimicrobial stewardship initiatives that can be performed by a clinical pharmacist in a hospital and the impact they can have in pneumonia patients

Self Assessment Questions:

Based on IDSA guideline recommendations, which of the following regimens represents optimal therapy for a patient who is currently hospitalized with CAP, after failing an outpatient course of azithrom

A Moxifloxacin 400 mg IV or PO daily

B: Doxycycline 100 mg IV or PO twice daily

C: Ceftriaxone 1 g IV daily plus azithromycin 500 mg IV or PO daily

D: A & c

Which of the following antimicrobial stewardship initiatives has the best potential, with routine use, to decrease rates of antibiotic resistance?

A Cycling of antibiotics

B De-escalation of therapy

C Combination therapy

D All of the above

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-448 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES RELATED TO ALCOHOL WITHDRAWAL MANAGEMENT UTILIZING VALPROIC ACID

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PURPOSE: Benzodiazepines (BZD) are standard of care for management of alcohol withdrawal syndrome (AWS). Valproic acid (VPA) avoids many of the undesirable effects of BZD; several studies have demonstrated efficacy of VPA for AWS however they contained methodological flaws and small patient populations. This study assessed if VPA combined with BZD improved outcomes related to management of AWS compared to BZD alone. METHODS: All adult patients from a mixed intensive care unit population who had a Clinical Institute Withdrawal Assessment for Alcohol Revised (CIWA-Ar) assessment performed and received either BZD or VPA were retrospectively identified. Patients were stratified into two groups: BZD alone and BZD combined with VPA. The primary endpoint was amount of BZD in lorazepam equivalents. Secondary endpoints included: total mortality, hospital and ICU lengths of stay (LOS), treatment duration, mean CIWA-Ar score, and percentage of CIWA-Ar <8. RESULTS: A total of 127 patients met inclusion criteria; 90 (70.9%) received BZD alone while 37 (29.1%) received combination therapy. Median total BZD use was 12.8mg compared to 17mg with combined therapy (p=0.81). No difference was found in mortality (p=1). Both hospital and ICU LOS were significantly lower with standard therapy (p<0.01,0.00). Treatment duration was similar between groups (p=0.95). The mean percentage of CIWA-Ar<8 was 65.7% and 55% (p=0.04) for BZD alone and combined therapy patients; median average CIWA-Ar scores were 6 and 8.5 (p=0.01) respectively. CONCLUSION: No benefit was seen for addition of VPA to BZD however it was not found to worsen outcomes. VPA may lower CIWA-Ar scores however optimal dosing strategies will require further study.

Learning Objectives:

List two disadvantages to benzodiazepine therapy for treatment of alcohol withdrawal syndrome

Describe current treatment strategies for alcohol withdrawal syndrome using CIWA-Ar

Self Assessment Questions:

Which of the following is a limitation to use of benzodiazepines for alcohol withdrawal?

A Well tolerated

B: No intravenous formulation

C: Respiratory Depression

D: Lack anticonvulsant activity

Which CIWA-Ar scorer indicates minor withdrawal symptoms and typically do not warrant administration of benzodiazepines?

A 8

B 16

C 24

D 32

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-449 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

STANDARDIZATION OF ALLERGY PROFILE DOCUMENTATION AND REFERRAL FOR PENICILLIN SKIN TESTING

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Purpose: Maintaining a well documented allergy profile can aid providers in avoiding unnecessary use of less desirable therapy options due to inaccurate allergy profiles. The main objective of this study is to improve documentation of allergy profiles by developing a standard method of obtaining and documenting allergy histories. A secondary objective is to educate patients, who have a penicillin allergy of undetermined reaction, on penicillin skin testing and referring those patients for penicillin skin testing if appropriate. Methods: This project was submitted to the Institutional Review Board before beginning and was determined exempt. Allergy histories will be taken by a pharmacist for every patient admitted or transferred to our intermediate care unit during the one month study period. The allergy profile in the electronic medical record will be updated following a standard documentation format. Data will be collected on how many allergies were deleted, added, or modified during the process of obtaining the allergy history and the total time of the intervention. After completion of the study period, the standardized documentation method will be updated based on the data analysis results. Nursing staff and other providers will then be educated on the study results and the standard method of documenting allergies. Allergy profiles will be monitored to ensure documentation remains appropriate. Patients that claim a penicillin allergy with an undetermined reaction will be educated on penicillin skin testing, and screened for penicillin skin testing eligibility. If appropriate, the patient will be referred to an allergist for penicillin skin testing. Data will be collected on how many patients receive skin testing and what the outcomes are. Results and Conclusion: Data collection and analysis are currently in progress.

Learning Objectives:

Describe the purpose of proper drug type selection when entering allergies.

Recognize when penicillin skin testing is appropriate.

Self Assessment Questions:

What is the purpose of selecting a drug as a drug ingredient when entering allergies?

A Alerts for drug product excipients are triggered

B: More allergy alerts are triggered

C: Fewer false allergy alerts are triggered

D: Any drug product selected is appropriate

Which of the following excludes patients from penicillin skin testing?

A Concurrent use of antihistamines

B Concurrent use of calcium channel blockers

C Suspected reaction within a year of when skin testing would take p

D Informed consent

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-704 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST RISK ASSESSMENT AND THE EFFECT OF GROWTH FACTOR GIVEN AS PRIMARY PROPHYLAXIS ON THE INCIDENCE OF FEBRILE NEUTROPENIA

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Purpose: The objective of this study is to evaluate the use of growth factors as primary prophylaxis in patients receiving chemotherapy and effect of pharmacist documentation of patients risk of neutropenia-related complications. Methodology: Data collection will take place in the form of retrospective and prospective chart reviews. One hundred patients with lung, prostate, esophageal, or gastric cancer receiving full care from Zablocki VA Medical Center (ZVAMC) during the time period from July 1, 2011 to July 1, 2012 will be randomly selected for review using data from the electronic medical record. Chart review will include an assessment of neutropenia risk based on patient risk factors and therapy received, and the use of growth factor as primary prophylaxis. The primary endpoints include the presence of pharmacist-completed neutropenia risk assessment in the patient chart and whether patients developed neutropenic fever. Secondary endpoints include the use of growth factor as primary prophylaxis, the number of hospital days spent inpatient, the number of days spent on antibiotics, and the use of growth factor as secondary prophylaxis of neutropenia. Exclusion criteria include patients not receiving full care at the ZVAMC, patients receiving radiation, and patients that are mid-cycle at the time of review. Additionally, a prospective review will be completed for a maximum of 100 patients with new diagnoses of the aforementioned cancers receiving treatment at ZVAMC between January 1, 2013 and June 1, 2013. Information collected will be utilized to form a recommendation regarding the use of growth factor as primary prophylaxis of neutropenia The acceptance of the recommendation, as well as the development of neutropenic fever will be documented. Statistical analysis for both retrospective reviews will consist of descriptive statistics. Results: Data collection and evaluation are in progress. Results will be presented at Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Describe patient-specific characteristics that increase the likelihood of developing febrile neutropenia and are associated with worse patient outcomes

Discuss the impact of pharmacist recommendations regarding the use o growth factor as primary prophylaxis.

Self Assessment Questions:

Which of the following is a risk factor for the development of neutropenic fever?

A ECOG performance status score of 1

B: Albumin level of <3.5 g/dL

C: Age >55 years

D: Localized disease

A patient with febrile neutropenia on average requires a hospital admission of _____ days.

A 6.5

B 8.7

C 11.5

D 16.1

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-450 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF BETHANECHOL OR TAMSULOSIN FOLLOWING URETHRA URINARY CATHETER REMOVAL TO PREVENT REINSERTION OF INDWELLING URINARY CATHETER IN NEUROSURGERY PATIENTS

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Purpose: Neurosurgery patients are at risk of urinary bladder dysfunction caused by neurogenic acute urinary retention due to postoperative retention or lesions within the central nervous system. Few clinical trials have shown that alpha1-adrenoreceptor antagonists and choline esters are useful for the facilitation of indwelling catheter removal. Complications of urinary catheterization carry financial burden to institutions secondary to recent Centers for Medicare and Medicaid Services rule changes regarding reimbursement for preventable healthcare-associated infections. The study objective was to determine i bethanechol or tamsulosin is effective in facilitating removal and prevention of replacement of indwelling catheters in patients admitted to the Neurosurgery service. □□Methods: A retrospective review was conducted of patients ≥18 years of age, admitted to the Neurosurgery service, with an ICD-9 code for indwelling urinary catheter insertion from August 2010 to September 2012. The bethanechol and tamsulosin dispensing record was utilized to identify patients who received either agent. Patients under age 18, spinal cord injury, history of pelvic cancer or malignancy, urinary tract infection, benign prostatic hyperplasia or prescribed study medications as outpatient were excluded. Case patients were separated into two groups: patients receiving bethanechol or tamsulosin. Control patients did not receive study agents and had at least one order for straight intermittent catheterization and were matched to case patients by age, gender, and neurosurgical diagnosis. The primary outcome was the ability to spontaneously void ≥150 mL of urine at a single time without need for replacement of indwelling catheter within 24 hours. Secondary outcomes included incidence of indwelling re-catheterization and straight catheterization, post-void residual volume length of catheterization and hospital stay, and time to spontaneous voic between agents. □□Results: To be presented at Great Lakes Pharmacy Resident Conference (GLPRC). □□Conclusions: Pending final data analysis. To be presented at GLPRC

Learning Objectives:

Review current literature regarding bethanechol or tamsulosin for the facilitation of indwelling urinary catheter removal.

Discuss methodology of study design, pertinent findings, limitations, and conclusions.

Self Assessment Questions:

Bethanechol works by which of the following mechanisms:

A Antagonizes alpha1-adrenoreceptors with minimal alpha2 effects t
B: Activates the muscarinic acetylcholine receptor to increase bladde
C: Antagonizes alpha1-adrenoreceptors to reduce prostatic smooth m
D: Inhibits 5-alpha reductase leading to significant decreases in serur

Which of the following is NOT a commonly associated side effect of bethanechol?

A Abdominal cramping
B Skin flushing
C Orthostatic hypotension
D Diarrhea

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-451 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING PATIENTS AT HIGH RISK FOR HOSPITAL USE AND DRUG-RELATED PROBLEMS

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Purpose: To identify Accountable Care Organization patients at high risk for hospital use and drug-related problems in a geriatric Patient-Centered Medical Home.□□Methods: Retrospective analysis of geriatric Patient-Centered Medical Home patients who are members of the Detroit Medical Centers Accountable Care Organization and have filled ≥ 10 prescription medications in the past year (July 2011- July 2012), but not currently residing in a nursing home. Data collected from retrospective chart review based on routine patient interview, includes baseline demographic data, comorbidities, medication use, number of drug-related problems, healthcare utilization (number of providers, clinics, pharmacies, clinic visits, ER visits, observational stays, admissions) and healthcare costs. The risk of hospital use and the rates of drug-related problems were compared among the following patient groups: (1) patients with certain comorbidities: CHF, DM, COPD, CAD/MI, osteoporosis, active malignancy, renal disease, liver disease, stroke/TIA, cognitive impairment (2) with certain medications: antiseizure medications, anticoagulants, hypoglycemic agents, opioids and psychotropics (3) with a high or low number of comorbidities (4) with a high or low number of providers/prescribers, clinics, pharmacies. We quantified and categorized drug-related problems identified based on definitions from Strand et al. and their severity. Methods of DRP identification (chart review vs. patient-pharmacist interview) were differentiated. Pharmacist time spent with each patient was documented This study has Institutional Review Board approval.□□Results/Conclusions: To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify factors that have the potential to increase patients risk for hospital use or drug-related problems.

Describe pharmacist interventions in an Accountable Care Organization and Patient-Centered Medical Home.

Self Assessment Questions:

Which of the following factors are likely to increase a patients risk for hospital use?

A Chronic disease
B: High risk medications
C: Middle age
D: Both A and B are correct

Accountable Care Organizations and Patient-Centered Medical Homes are:

A Examples of coordinated care
B Government run insurance programs
C Medicare safety initiatives
D Accrediting organizations

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-705 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS, ANGIOTENSIN RECEPTOR BLOCKERS, AND BETA-BLOCKERS IN HEART FAILURE PATIENTS AT A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: This analysis was conducted to determine the utilization of recommended therapeutics including angiotensin converting enzyme inhibitors (ACE-I), angiotensin receptor blockers (ARB), and beta-blockers (BB) among outpatients with heart failure at the Dayton, OH Veterans Affairs Medical Center (VAMC). In addition, utilization of medications typically not recommended in patients with heart failure were examined including nonsteroidal anti-inflammatory drugs (NSAID), anti-arrhythmics (AA), and nondihydropyridine calcium channel blockers (NDHP CCB). Methods: Data was collected from the Veterans Affairs electronic medical record via the Decision Support System for all outpatients with a diagnosis of heart failure in the fiscal year 2012 at the Dayton VAMC. This query included age, gender, comorbidities, admissions for heart failure, and medications including dosages prescribed. The number and percent of patients taking ACE-Is, ARBs, BBs, NSAIDs, AAs, and NDHP CCBs were determined. In addition, the mean total daily dose of lisinopril, losartan, and valsartan was calculated. Results: There were 1374 patients with a diagnosis of heart failure at the Dayton VAMC in fiscal year 2012. Of these patients, 633 patients were taking an ACE-I (46.07%), 167 patients were taking an ARB (12.15%), and 975 patients were taking a BB (70.96%). For medications not recommended, there were 194 patients taking NSAIDs (14.12%), 19 patients taking AAs (1.38%), and 76 patients taking NDHP CCBs (5.53%). The mean total daily dose of lisinopril was 21.388 mg, losartan 66.983 mg, and valsartan 259.642 mg. Conclusions: In hear failure patients at the Dayton VAMC, just over half were prescribed an ACE-I or ARB with a greater proportion of patients receiving a BB. There was minimal utilization of medications with a relative contraindication in heart failure. This data will be useful for targeting a suboptimally treated population for additional intervention.

Learning Objectives:

Identify guideline-recommended beta-blockers for patients with systolic heart failure

Describe the dosing strategy for ACE-I in patients with heart failure

Self Assessment Questions:

Which beta-blocker has shown a mortality benefit and is recommended for use in patients with reduced left ventricular ejection fraction?

A Metoprolol tartrate
B: Atenolol
C: Carvedilol
D: Propranolol

What dosing strategy should be utilized for ACE-Is in patients with heart failure?

A Patient should be started at the target dose of ACE-I
B Low doses should be initiated with titration to target doses of ACE-
C Doses are determined based on therapeutic response
D Doses of ACE-Is are not important

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-452 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PATIENT AND PROVIDER SATISFACTION WITH A PHARMACIST MANAGED OUTPATIENT ORAL ANTICANCER PROGRAM

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With the recent development of novel anticancer agents, the utilization c oral chemotherapy medications has increased considerably. Although oral systemic cancer treatment has numerous benefits, it brings to light multiple concerns for health care providers. Potential complications include safety of prescribing, medication acquisition difficulties and financial implications. In spring 2012, the University of Michigan initiated a pharmacist-run outpatient oral anticancer program. The program has 3 main focuses: increasing medication access and affordability, patient education/medication review, and documentation. The overall objective of this study is to assess both patient and provider satisfaction with the newly established pharmacist-managed oral anticancer program through survey evaluation.

Learning Objectives:

List potential complications from oral anticancer medications.

Describe the 3 main focuses of the University of Michigan Oral Anticancer Program.

Self Assessment Questions:

Which of the following is a potential complication of oral anticancer medications?

A Patient Convenience
B: Sustained Drug Levels
C: Adherence
D: Elimination of need for IV access

Which of the following are services provided by the University of Michigan Oral Anticancer program?

A Patient education and medication review
B Documentation of start date and medication reconciliation
C Assurance of medication acquisition
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-706 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING MEDICATION RECONCILIATION COMMUNICATION BETWEEN HOSPITAL AND NURSING HOME UPON DISCHARGE

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Purpose: Miscommunication during transitions of care can cause medication errors, adverse drug events (ADEs) and potentially, hospital readmissions. Nursing home (NH) residents are generally more elderly, frail, and take more medications than their community-dwelling counterparts, putting them at an increased risk for ADEs and consequent hospital stays. The purpose of this study is to optimize communication between the hospital and NH at discharge, as it pertains to medication reconciliation. Methods: Patients were included if they were discharged from Froedtert Hospital to one of two NHs, taking at least one medication, and had both pre-defined medication lists. The primary objective is to evaluate the number and type of discrepancies found among multiple medication lists sent to NHs. The secondary objective is to evaluate currently documented communication between the hospital and NHs. Currently, there is no agreed-upon system to document such communications. Following this initial retrospective char review, a plan for improvement will be carried out followed by a second review, pending IRB approval. Results: In the initial review, there were 25 discrepancies found in the 45 included hospital stays. The most common discrepancy type was omission/commission (N = 11; 44%), followed by discrepant dose, and discrepant frequency. The most common classes of medications were cardiovascular-renal drugs (N = 8 32%), hematologic agents, gastrointestinal agents, and metabolic and nutrient agents. The discrepancies were also stratified into low-risk, medium-risk, and high-risk errors in their potential to cause harm based on the medication class involved. There were 4 low-risk discrepancies, 15 medium-risk discrepancies, and 6 high-risk discrepancies found in this initial review. Conclusion: From this initial review, we found that multiple medication lists can lead to discrepant information and most discrepancies found involved a medium to high-risk error in their potential to cause patient harm. Other conclusions remain under investigation.

Learning Objectives:

Describe why nursing home patients are particularly vulnerable to medication errors caused by miscommunication within the discharge process.

List the three most common types of medication discrepancies found in this study.

Self Assessment Questions:

In general, why are nursing home patients particularly vulnerable to medication errors upon discharge from a hospital?

A They are forgetful, resulting in poor adherence
B: They are elderly, frail, and take multiple medications
C: Nursing home formularies are too restricting
D: Hospitals do not send enough information to the nursing home

Which of the following is one of the most common types of medication discrepancies found in this study?

A Discrepant route
B Duplicate therapy
C Omission/commission
D Missing information

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-822 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

AMINOCAPROIC ACID IN PATIENTS REQUIRING MASSIVE TRANSFUSION

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Statement of Purpose Acute coagulopathies have been described in both cardiothoracic and trauma patients who require massive blood transfusion as a result of blood loss. The pathophysiology of these coagulopathies is multifactorial, often including a state of hyperfibrinolysis. Antifibrinolytics, such as aminocaproic acid and tranexamic acid, may be beneficial in reducing blood product utilization and mortality. A limited number of studies have been published with regard to aminocaproic acid in cardiothoracic surgery, but no published studies were found for exsanguinating trauma patients. The purpose of this study is to evaluate the efficacy and safety of aminocaproic acid in both cardiothoracic and trauma patients requiring massive transfusion.

Statement of Methods Used This is a retrospective, cohort study, evaluating patients who received at least 10 units of blood in 24 hours from January 1, 2007 to August 1, 2012. Patients must be at least 18 years of age and cannot be pregnant, be an inmate of a prison or correctional facility, or have received prior fibrinolytic therapy. The objective is to assess the effect of aminocaproic acid on blood product utilization, mortality, and vasocclusive events. Endpoints to be evaluatec include: 24-hour mortality, 28-day mortality, cause of death, number of surgeries, length of hospital stay, total blood product utilization, blood product utilization within the first 24 hours, and the incidence of vasocclusive events. Logistic regression will be used to compare efficacy and safety endpoints, controlling for age, shock index, injury severity score, cryoprecipitate, and administration of prothrombin complex concentrate and Factor VIIa. Summary of (Preliminary) Results and Conclusion Results and conclusion will be presented in full at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the pathophysiologic mechanism behind the acute coagulopathy of trauma.

Describe the potential role of antifibrinolytic therapy in patients receiving massive transfusion.

Self Assessment Questions:

Which of the following likely does not play a role in coagulopathies of cardiothoracic surgery and trauma?

A Hyperfibrinolysis
B: Shock
C: Normothermia
D: Inflammation

Which mechanism may explain the role of antifibrinolytics in acute coagulopathies?

A Decreased activation of plasmin from plasminogen
B Decreased thrombin-thrombomodulin complexes
C Increased platelet production
D Increased activity of plasminogen activator inhibitor-1

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-453 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DO YOU HEAR WHAT I HEAR? COMPARING ACCURACY OF MEDICATION RECONCILIATION CONDUCTED BY PHARMACY INTERNS AND PHARMACISTS

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The Joint Commission (TJC) added medication reconciliation as a National Patient Safety Goal in 2005. While many healthcare professionals are capable of completing a focused medication history, some institutions rely on pharmacists to obtain a patients full medication history. One option that has not been assessed at our institution is the ability of pharmacy interns, relative to that of pharmacists, to perform medication reconciliation. This study aims to assess the accuracy and completeness of medication reconciliation conducted by a pharmacy intern as compared to a pharmacist.□□The pharmacy intern and pharmacist will undergo focused training on the process of medication reconciliation in the Emergency Department (ED). Each individual will work with an ED pharmacist during several four hour shifts to ensure understanding of the ED triage process. After training, the pharmacy intern will enter a patients room and conduct a full medication reconciliation. The pharmacist will then interview the same patient, also performing a full medication reconciliation. The information gathered by the intern will be compared to that obtained by the pharmacist. Any omissions or errors made by either the pharmacy intern or the pharmacist will be categorized and documented. Ideally, the pharmacy interns will demonstrate ≤5 percent deviation from the pharmacist when completing a patients medication history. The goal is for the pharmacy interns to achieve at least 95 percent accuracy when comparing their omissions and errors to the total number documented.

Learning Objectives:

Discuss the importance of completing medication reconciliation for patients admitted to a pediatric emergency department

Outline areas of a medication history that are pertinent to obtain while interviewing a patient.

Self Assessment Questions:

A 5 yom presents to the ED with his mother for an asthma exacerbation. Which of the following would be included if conducting a focused medication reconciliation?

A ibuprofen 100mg/5mL

B: albuterol HFA 90mcg/actuation inhaler

C: Spongebob gummy multivitamin

D: ondansetron 4mg oral tablet

Which of the following is pertinent to obtain when performing a full medication reconciliation?

A The title of the patient's favorite movie

B The make and model of the patient's vehicle

C Name of every single medication a 50 y.o. patient has consumed i

D Any allergies to food or drugs the patient has and the reaction the

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-823 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A MORPHINE WEANING PROTOCOL IN PEDIATRIC INTENSIVE CARE PATIENTS

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BACKGROUND: Analgesics are used in the pediatric intensive care (PICU) to treat pain, anxiety and provide comfort. Abrupt discontinuation or too rapid tapering of analgesics in physically dependent children may result in withdrawal symptoms. The exact incidence of opioid withdrawa in critically ill children is unknown. Previously at Childrens Hospital of Michigan (CHM) the opiate weaning schedule was based on the Robertson et al. article published in Pediatric Critical Care Medicine in 2000. The initial methadone doses were calculated by this method but subsequent doses varied based on physicians discretion and patient needs. Due to the variations in practice, the Department of Pediatric Critical Care Medicine at CHM implemented a standardized protocol in the PICU using oral morphine rather than methadone because of the pharmacokinetic variations of methadone. □□PURPOSE: To describe the incidence of opioid withdrawal in PICU patients using a prospective 2 arm morphine weaning protocol. Secondary outcomes were to compare the duration of medication therapy, cost, and length of ICU stay of historical methadone patients versus current morphine weaning patients □□

METHODS: Single-center prospective observational study with retrospective historical controls of PICU patients who received methadone or morphine weaning protocols and were admitted to CHM between January 1, 2010 and March 1, 2013. The current morphine weaning protocol consists of 2 separate arms; a 10 day and 20 day wean. An original daily dose is calculated by multiplying the patients continuous intravenous infusion daily morphine requirements by 3. The original daily dose is decreased by 10% each day or every other day depending on which arm the patient is in, alternating dosing frequency. Withdrawal symptoms in prospective patients were assessed using the Withdrawal Assessment Tool (WAT-1). □□RESULTS/CONCLUSIONS: Results to be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Review the current literature with regards to methadone weaning protocols in pediatric intensive care unit patients.

Explain the withdrawal assessment tool (WAT-1) for assessing opiate withdrawal symptoms in pediatric patients.

Self Assessment Questions:

What is a limitation for using methadone in opiate withdrawal?

A Drug accumulation after prolonged dosing

B: Short half-life

C: Excellent oral bioavailability

D: No black-box warnings

What are the different components of the withdrawal assessment tool (WAT-1)?

A Patient record

B Pre-stimulus

C Stimulus

D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-454 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST IMPACT ON MEDICATION USE THROUGH A COMMUNITY PHARMACY ORAL ONCOLOGY MEDICATION MANAGEMENT PROGRAM

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Purpose: To evaluate the pharmacist impact on patient-reported medication adherence, tolerance , and drug therapy knowledge after providing follow-up counseling to patients initiating a new oral oncology medication regimen. □□Method: A large community chain has implemented an oral oncology medication management program. Patients included in the program are English-speaking, 18 years or older, and have received a new oral oncology medication from the community pharmacy located inside of a large hospital. The pharmacist conducts three phone consultations to patients that meet the program inclusion criteria during the first month of their therapy. The phone consultations are conducted 3, 15, and 28 days after the oral oncology medication has been dispensed or mailed to the patient. The consultations with the patient focus on the importance of being adherent with the medication regimen, assessment for medication tolerance, furthering patient education regarding medication use, and providing answers to patient specific questions on drug therapy. In the event that drug therapy problems are identified, the pharmacist will contact the oncologist to report the suspected problem and provide counseling to minimize the adverse effects. The pharmacist records patient responses to questions asked in the consultation about self-reported adherence, tolerance to medications, side effects, interventions or referrals made, and additional counseling provided. Basic demographic information is obtained through the community pharmacys dispensing system. In this descriptive, exploratory, non-experimental study, the main outcome measures will be program frequency of pharmacists interventions, type of intervention needed (pharmacist counseling needed, contact with oncologist needed, or other), and patient self-reported adherence rates. Demographics will be reported using means +/- standard deviation or frequencies. Comparisons between demographic groups will be made with chi-square or Fishers exact test, where appropriate. Pharmacist intervention rates and patient adherence rates will be addressed using frequency counts.□ □Results: NA (research in progress)□□Conclusion: NA (results pending)

Learning Objectives:

Name the potential safety issues for patients when initiating a new oral oncology treatment regimen.

Recall the goals of the oral oncology medication management program.

Self Assessment Questions:

Which of the following is a potential safety issue for patients beginning oral oncology treatment?

A Less time spent on doctor visits

B: Convenience of taking the medication in their home

C: Administration errors

D: More pharmacist interaction

One of the goals of the oral oncology medication management program in the community setting is to

A Save the patient money on generic medications

B Provide additional education to patients about their oncology medi

C Force physicians and nurses to adhere to the pharmacists' recomr

D Change the patient's medication regimen as the pharmacist sees f

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-455 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF EARLY NIMODIPINE DISCONTINUATION ON DISCHARGE DISPOSITION IN ANEURYSMAL SUBARACHNOID HEMORRHAGE

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Purpose: Aneurysmal subarachnoid hemorrhage (SAH) is a serious, life threatening hemorrhagic stroke that accounts for roughly 5% of all strokes. A common complication of SAH is the development of cerebral vasospasm, or the constriction of arteries leading to reduced cerebral perfusion and secondary complications (i.e. delayed cerebral ischemia). Clinical trials have demonstrated that the use of nimodipine for a 21 day course improves functional outcome and may reduce severe neurologic deficits associated with cerebral vasospasm. However, many times in clinical practice nimodipine is discontinued prior to 21 days. The outcomes associated with early discontinuation of nimodipine remain unknown. Therefore, the purpose of this study is to determine if early discontinuation of nimodipine affects the discharge disposition of SAH patients.□□Methods: A retrospective chart review of SAH patients admitted to the Neuroscience Intensive Care Unit (NSICU) at Rush University Medical Center between the dates of January 1st, 2008 to September 30th, 2012 will be performed. Patients 18 years of age or older, with evidence of SAH, who received the first dose of nimodipine within 96 hours of ictus will be included in this study. Patients who experienced death prior to neurosurgical intervention will be excluded. Data will be analyzed to determine the effect early discontinuation of nimodipine has on discharge disposition. Discharge disposition will be recorded and classified as favorable (home, inpatient or outpatient rehabilitation) or unfavorable (nursing home, hospice, or death). Overall mortality, ischemic stroke, rebleeding, intracerebral hemorrhage, angiographic vasospasm, length of NSICU and hospital stay will also be analyzed.□□Results/Conclusions: Data collection and analysis are currently being conducted. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the goals of cerebral vasospasm management following an aneurysmal subarachnoid hemorrhage

Review the role of nimodipine in aneurysmal subarachnoid hemorrhage

Self Assessment Questions:

The overarching goal in the management of cerebral vasospasm is to

A Reduce ischemia by utilizing endovascular therapies as first line a

B: Reduce cerebral blood flow and prevent delayed ischemic deficits

C: Improve cerebral blood flow and prevent delayed ischemic deficits

D: Reduce ischemia by inducing hypotension with the use of calcium

Nimodipine has been shown to

A Reduce the incidence of angiographic vasospasm

B Improve functional outcome and reduce the incidence of severe ne

C Reverse vasospasm when used at a dose of 60 milligrams every 4

D Improves functional outcomes and reduce the incidence of severe

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-456 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEDICATION HISTORY PROCESS IMPROVEMENT FOR ORTHOPEDIC SURGICAL PATIENTS

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Background: Medication histories have a significant impact on patient safety. Studies have shown that approximately 54% of patients are reported to have at least one unintended medication discrepancy in their admission medication record. Studies have also shown that surgical patients carry an even higher risk of errors in medication reconciliation. Surgeons have the difficult task of being responsible for medication reconciliation and ordering home medications. These medications are often from another prescriber requiring the surgeon to rely on the patient to provide pertinent information regarding medication doses, strengths, and indications.□□Purpose: At Mercy Health Partners it has been found that many surgical patients medication histories still require extensive clarification post-operatively. When medication orders need clarifying, patients are often still under the effects of anesthesia and/or analgesics. The goal of this study was to improve the pre-operative medication history process to improve patient safety and decrease medication errors.□□Methods: This study was a retrospective chart review evaluating the impact of a new process aiming to improve medication histories for surgical patients. Baseline data was collected during October 2012 and project implementation started January 2013. Inclusion criteria included all inpatient elective orthopedic surgical patients residing in the community. A new process was implemented at the orthopedic office to provide more accurate information to the nurses conducting pre-admission testing (PAT) interviews. Patients were given a form to fill out with questions they will be asked from the PAT nurse, including a medication history. The primary objective was to evaluate whether a reduction in errors on medication history upon admission was seen after project implementation. Secondary objectives included: percentage of completed medication histories, types of errors, time spent clarifying errors, and hospital staff satisfaction scores of medication histories.□□Results/Conclusion: Data collection in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of correct medication histories upon admission in reducing medication errors

Identify points of improvement to ensure accuracy of medication historie

Self Assessment Questions:

A study by Kwan et al has shown that approximately what percent of patients are reported to have at least one unintended medication discrepancy in their admission medication record?

A 21%
B: 54%
C: 63%
D: 71%

Which of the following is a barrier to preventing accurate medication histories?

A Adequate health literacy
B Multidisciplinary approach
C Medication history/reconciliation done at all transitions of care
D Polypharmacy

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-824 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE ACCURACY OF PHARMACOGENETICS WARFARIN DOSING ALGORITHMS AND THE WARFARIN DOSING LABEL PLUS CLINICAL JUDGMENT

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Rational: Genes encoding cytochrome P450 2C9 (CYP2C9) and vitamin K epoxide reductase (VKORC1) significantly influence warfarin dose requirements. The FDA-approved warfarin labeling contains a dosing table stratified by CYP2C9 and VKORC1 genotypes. Several warfarin pharmacogenetic dosing algorithms have been developed. No one has examined the accuracy of the table when it is considered in the context of clinical factors. It is imperative to determine whether the dosing table, with clinical factors taken into account, is a better means of dosing warfarin than the use of algorithms. Pharmacists are the ideal experts to dose warfarin in the age of pharmacogenetics. □□Objectives: The primary objective of this study is to assess the ability of pharmacists to accurately predict warfarin dose requirements utilizing the genotype dosing table in the warfarin labeling and taking clinical factors into consideration for patients with known CYP2C9 and VKORC1 genotypes. The secondary objective is to determine the impact of a warfarin pharmacogenetics education program on the accuracy of genotype-guided warfarin dosing provided by a pharmacist. □□Methods This is a prospective cohort study that will be conducted in two phases. Prior to Phase I, de-identified patient data from a large and publically available warfarin pharmacogenetic data set will be used to build case-based scenarios. Cases will contain both genetic and clinical information. In phase I, clinical pharmacists will be asked to estimate the therapeutic warfarin dose for each case using the warfarin labeling table in combination with clinical judgment. Dosing accuracy will be compared to pharmacogenetic algorithms. During Phase II, an independent group of pharmacists will be asked to attend an educationa program on warfarin pharmacogenetics. Afterwards, they will be asked to complete the same patient cases described in Aim 1. Dosing accuracy will be compared between pharmacists in phase I and II. □□

Results: This study is in progress.

Learning Objectives:

Recognize the current Clinical Pharmacogenetics Implementation Consortium Guideline (CPIC) recommendations regarding the use of pharmacogenetic algorithms when dosing warfarin

Identify the enzymes responsible for the inter-patient variability in warfarin dose requirements

Self Assessment Questions:

Warfarin response is largely influences by which of the following enzymes?

A Cyp3a4
B: Cyp2c9
C: Vkorc1
D: Both B and C

When genotype is available, the current Clinical Pharmacogenetics Implementation Consortium Guidelines (CPIC):

A recommend the use of pharmacogenetic algorithms over the table
B recommend the use of the table in the warfarin labeling over the us
C recommend a combination of both the table in the warfarin labeling
D recommend against the use of both the table in the warfarin labelir

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-825 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A CLINICAL PRODUCTIVITY MONITORING SYSTEM

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Purpose: The American Society of Health System Pharmacists (ASHP) Pharmacy Practice Model Initiative (PPMI) recommends every pharmacy to track and trend productivity. Monitoring clinical and distributional productivity is an essential part of a department's operations and budget planning. Clinical productivity monitoring can augment a pharmacy departments ability to compare current services to industry best practices, identify areas of excellence or improvement, prospectively track outcomes after departmental changes, and document the impact o pharmacists' clinical activities. Currently, Aurora Health Care tracks only the departments distribution, weighted for clinical complexity, as a means to measure productivity. Our project objective is to efficiently capture clinical activities which make a positive impact on patient care and outcomes.□□Methods: Potential clinical tasks were identified via literature review, current pharmacy staff defined expectations, a staff survey, discussions with clinical experts, and discussions on professional online networks. Clinical tasks to be pursued were determined based on impact on patient care and outcomes. Measurable metrics were identified for the determined clinical tasks. An extraction method was developed for both manually documented and computer compiled metrics. Manually documented and computer compiled metrics were validated via a two week pilot and patient chart review. Metrics will be weighted based on administration preference based on clinical service complexity and impact on patient care. A monitoring platform/dashboard will be developed to trend ongoing data. Pharmacists will be trained on standardized documentation to facilitate data collection.□ □Results/Conclusions: Data collection and validation are currently being conducted. Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference 2013.

Learning Objectives:

Describe the importance of clinical service productivity monitoring.

Identify two potential metrics to monitor clinical service productivity.

Self Assessment Questions:

Which three options are applications of clinical productivity information?

A Identify areas of pharmacy excellence.

B: Illustrate nursing value.

C: Explain medication errors.

D: Guide library resource planning.

Which of the following metrics is considered a clinical productivity metric

A Number of tablets dispensed.

B Number of intensive care unit admissions.

C Number of creams compounded.

D Number of medications adjusted per renal dosing protocol.

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-707 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

AN INTERDISCIPLINARY APPROACH TO INCREASE EVENT REPORTING KNOWLEDGE

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Purpose:□According to the Institute of Medicine (IOM) approximately 98,000 deaths occur annually in the United States as a result of medical errors. The key to preventing adverse events is identifying issues that jeopardize patient safety. Patient Incident Reports (PIR) and near miss (NM) reports are used to identify patient safety concerns, but staff lack knowledge surrounding this process. The purpose of this project is to increase staff knowledge of types of reportable events, the reporting processes, and their role in patient safety. □□Methods:□This interprofessional quality improvement project involves pre/post surveys and pre/post event reporting data to evaluate educational interventions on a 35 bed medical unit. Data collection included a pre-survey assessing staff knowledge of reportable events, the reporting processes and patient safety roles; results will be used to design educational interventions. Baseline PIR data were collected from November 2012 through January 2013 and NM data were collected in quarter one, fiscal year (FY) 2013. PIR data included date of report, reporter profession and incident type. NM data included number of reports submitted. Effectiveness measures for the educational intervention will include post survey responses and event reporting data. □□Preliminary Results:□PIR data collected from November 15, 2012 and January 1, 2013 revealed 18 PIRs submitted. All reports were completed by Registered Nurses. Falls were the safety event most reported (39%) followed by medication errors (33%), transfusion errors (17%) and other injury (11%). One NM report was submitted during quarter one FY2013. Staff pre-surveys were distributed with a 78% response rate. Pre-survey data analysis is in progress and will be presented during the Great Lakes Residency Conference. □□Conclusion:□As a result of an interdisciplinary educational approach, expected outcomes include: an increase in event reporting, a greater variety of disciplines completing reports and an improvement in post survey data demonstrating increased knowledge.

Learning Objectives:

Recognize why continuous patient safety improvement efforts are needed in healthcare organizations.

Explain the importance of event reporting as it relates to patient safety.

Self Assessment Questions:

According to the 1999 Institute of Medicine report, to Err is Human, how many deaths occur as a result of preventable medical errors?

A 5,500 – 21,000

B: 22,000 – 43, 000

C: 44,000 – 98,000

D: 99,000 – 124,000

Event reporting leads to improvement of patient safety in the following ways:

A a.□Identifies weaknesses within an organization that may not prev

B b.□Provides the evidence to punish those not performing accordin

C c.□Creates a means for coworkers to vent their frustrations about

D d.□Helps to identify which department is to blame for poor patient

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-826 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING WHICH MEASURE OF RENAL FUNCTION BEST PREDICTS THE DEVELOPMENT OF MYALGIA IN PATIENTS ON STATINS

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PURPOSE: Statin therapy is the standard of care for the management o hyperlipidemia because it reduces cardiovascular-related morbidity and mortality. However, statin-associated myalgias are a concern for healthcare providers and myalgias may lead to medication non-adherence or discontinuation. Decreased renal function has been documented as a risk factor for the development of myalgias; however, there is a lack of data examining the relationship between renal function and statin-associated myalgia. Furthermore, there is no guidance available indicating at which stage of renal dysfunction the risk for myalgias significantly increases or which measure of renal function best predicts the development of a statin-associated myalgia. The purpose o this study is to determine the stage of renal dysfunction at which statin-associated myalgias are most likely to occur and which measure of rena function is the best predictor for this event.□□METHODS: Retrospective chart review of patients, identified through the John D. Dingell VA Medical Centers electronic medical record, who have an "allergy" (adverse drug event of myalgia) to a statin, controlled with patients taking a statin for more than one year without development of an "allergy" to statins. Baseline characteristics and laboratory data will be collected. Patients will then be grouped according to renal function utilizing SCr, GFR, and CrCl. Logistic regression will be used to determine if the difference in events between the groups is significant. Significance will be concluded if the p-value is < 0.05. In addition, the groups (SCr, GFR, CrCl) will be compared to determine if one measure is better able to predict the development of a statin-associated myalgia.□□RESULTS & CONCLUSIONS: Data collection is currently in progress with final results and conclusions anticipated to be presented a Great Lakes Pharmacy Resident Conference 2013.

Learning Objectives:

Describe the problem with determining the true incidence of statin-associated myalgia

Identify risk factors for statin-associated myalgias

Self Assessment Questions:

Which if the following is true regarding statin-associated myalgias?

A There are consistent, standard definitions for the terms describing
B: Statin-associated myalgia in actual clinical practice is uncommon (
C: Every statin-associated myopathy is reported to the FDA
D: The true incidence of statin-associated myalgia in clinical practice

Which of the following factor could increase a patients risk for developing myalgia while receiving therapy with a statin?

A Younger age
B Male sex
C Frail body frame/low BMI
D Normal renal function

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-457 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF CONTRAST-INDUCED NEPHROPATHY DURING A SHORTAGE OF INJECTABLE SODIUM BICARBONATE

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Purpose: Contrast-induced nephropathy (CIN) is a leading cause of acute renal failure in hospitalized patients, most notably in those with pre existing renal disease. Historically, the cornerstone for the prevention of CIN is intravenous volume supplementation. There is much debate in the medical journals on the superiority of parenteral sodium bicarbonate versus parenteral normal saline for the prevention of CIN. Current guidelines do not address the preference of one type of hydration over the other. The aim of this project is to evaluate the incidence of CIN during a period of an injectable sodium bicarbonate shortage. Parenteral normal saline was used in the place of sodium bicarbonate. The incidence of CIN will be compared to a similar time period when sodium bicarbonate was not on shortage.□□Methods: This is a retrospective study examining two equal, separate periods of time, in patients undergoing cardiac catheterizations for the indications of STEM and NSTEMI/UA who received the CIN protocol prior to their procedure. The dates of data collection include December 16, 2011 to March 15, 2012 when there was no shortage of injectable sodium bicarbonate and then from March 16, 2012 to June 15, 2012 when there was a shortage of injectable sodium bicarbonate. The primary outcome is the incidence of contrast-induced nephropathy, defined as a ≥0.5 mg/dL increase in serum creatinine or a 25% increase from a recorded admit baseline serum creatinine. Secondary outcomes include change in serum creatinine levels from baseline in 48 hours, acute kidney injury leading to dialysis attributed to contrast media, time until hospital discharge and change in serum bicarbonate levels. □□Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the need for proper volume supplementation before and after cardiac catheterizations for those patients at risk for contrast-induced nephropathy

Identify potential alternatives to sodium bicarbonate for the prevention of contrast-induced nephropathy

Self Assessment Questions:

Which of the follow is/are a potential reason(s) for the development of contrast-induced nephropathy?

A Free radical generation in the acidic environment of the renal medi
B: Direct cardiotoxicity leading to cardiorenal syndrome
C: Hypoxia-induced oxidative stress
D: Both A and C

Which agent is commonly used in addition to volume supplementation to prevent contrast-induced nephropathy?

A Lisinopril
B N-acetylcysteine
C Ibuprofen
D Hydralazine

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-458 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF PHARMACIST-PERFORMED MEDICATION RECONCILIATION VS. USUAL CARE

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PURPOSE: Medication reconciliation was recognized as a National Patient Safety Goal in 2005 by The Joint Commission. Recent literature reports that medication discrepancies occur as frequently as in 70% of patients during hospital admission or discharge, and are associated with increased potential for adverse drug events (ADEs). Medication discrepancies are associated with increased length of stay, number of emergency department (ED) visits and hospital readmissions, and overall healthcare utilization. Pharmacist-led medication reconciliation programs have been reported to improve these outcomes. Pharmacists, as medication experts, are uniquely qualified to perform medication reconciliation to ensure patient medication records are accurate and changes made during transitions of care are appropriate. The objective of this study is to determine the effect of pharmacist-conducted medication reconciliation on medication history accuracy and discharge medication list optimization. METHODS: This prospective study is being conducted from December 2012 to March 2013 at Advocate Illinois Masonic Medical Center (AIMMC). Patients admitted to the telemetry unit are being enrolled into our study in 2 phases. In Phase I, a nurse conducts the medication reconciliation process per usual care, which includes medication history and discharge medication list review. In Phase II, a pharmacist performs the same medication reconciliation processes in place of the nurse. In each phase, a medication history accuracy audit and discharge medication list optimization audit are conducted by an audit pharmacist. The first primary outcome is medication history accuracy as defined by the number of discrepancies identified in Phase I (usual care) versus Phase II (pharmacist care). The second primary outcome is discharge medication list optimization as defined by the number of opportunities identified to optimize the medication list, compared between usual care and pharmacist care. Secondary outcomes include pharmacist interventions and pharmacist time. RESULTS/CONCLUSIONS: Data collection and analysis are in progress. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize negative outcomes associated with medication discrepancies, as supported by recent literature.

Identify common types of medication discrepancies found in admission medication histories.

Self Assessment Questions:

Based on current literature, which of the following outcomes have been associated with medication discrepancies?

A Increased patient satisfaction

B: Decreased adverse drug events (ADEs)

C: Increased length of stay (LOS)

D: Decreased hospital readmissions

Which of the following is a common type of medication discrepancy associated with admission medication histories?

A Incorrect medication allergy

B Complete drug omission

C Incorrect dose, route, or frequency

D B and C are both correct

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-827 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES AND MONITORING OF PATIENTS TREATED WITH DABIGATRAN OR RIVAROXABAN FOR ATRIAL FIBRILLATION

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Atrial fibrillation (AF) is a common type of arrhythmia associated with a high risk for stroke. Warfarin, a vitamin K antagonist, is effective in reducing the rates of stroke in patients with AF. However, warfarin use is limited by unpredictable pharmacokinetics, potential for drug interactions, and need for frequent laboratory monitoring. Recently, two new oral anticoagulants were approved for stroke prevention in patients with non-valvular AF: dabigatran, a direct thrombin inhibitor and rivaroxaban, a direct factor Xa inhibitor. The approval of dabigatran and rivaroxaban provide healthcare professionals with alternative anticoagulation options in these patients. Although both agents require dose adjustments in the presence of renal insufficiency, there are no current, specific monitoring guidelines available. The goal of this retrospective, cohort study is to determine what, if any, monitoring and education is being performed in patients with non-valvular AF on dabigatran or rivaroxaban. Data collection will be in the form of a retrospective chart review for the assessment of primary and secondary study objectives. The primary objective is to evaluate electronic medical records to determine if any monitoring or education is being performed for patients treated with dabigatran or rivaroxaban. Secondary objectives are to assess the rates of cerebrovascular accidents and bleeding events, and to evaluate adherence to therapy and relationship to the education provided. Patients with primary care physician or cardiology clinic visits at the University of Illinois Hospital and Health Sciences System will serve as the target population. Data will be collected at the start of therapy with either dabigatran or rivaroxaban and at each follow-up visit. Statistical analyses of study endpoints will be assessed using descriptive statistics. Approximately 250 patients are included in the study. Data collection is currently in progress. Results and conclusions will be made available once data analysis is complete.

Learning Objectives:

List three advantages of the novel oral anticoagulants in the treatment of atrial fibrillation

Identify monitoring parameters for patients treated with dabigatran or rivaroxaban

Self Assessment Questions:

Which of the following is true regarding the novel, oral anticoagulants?

A They have no established role in the treatment of non-valvular atria

B: There are no specific monitoring criteria available to guide treatme

C: They have significant drug-drug interactons limiting their use

D: Routine laboratory monitoring is required to determine safety and e

What laboratory parameters should be monitored in all patients treated with dabigatran or rivaroxaban?

A INR and PLT

B CrCl and PT

C CrCl and CBC

D CBC and INR

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-459 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INR HOME MONITORING: FINDING QUALIFIED CANDIDATES AND IMPLEMENTING A PROGRAM IN A PHARMACIST-MANAGED ANTICOAGULATION CLINIC

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Purpose:□To assess Froedtert Hospital Anticoagulation Clinic (FHAC) patients interest in, prior knowledge of and ability to perform INR home-monitoring.□To implement a warfarin INR home-monitoring program in a maximum of 5% of FHAC patients.□□Methods: □A survey was developed to gather feedback from patients and pharmacists at FHAC. The intention was to determine what percent of interested patients are considered eligible for home-monitoring. Further review evaluated in-clinic reimbursement with expected home-monitoring reimbursement. Financial justification was completed by analyzing current reimbursement, examining clinic population by insurer, and inferring reimbursement through Medicare billing codes. Implementation of this program targeted current clinic home draw population, as FHAC cannot bill for INR home draws, and some in-clinic patients. □□Results:□Based on results from the financial analysis, it was decided to enroll no more than 5 % of current FHAC population at any given time. Due to the positive financial impact of home-draw patients, no maximum enrollment was set for this population. □It was decided to use the CoaguChek XS by Roche diagnostics as the point-of-care (POC) meter for the program. Pharmacists were educated to become certified trainers to allow for in-clinic patient education and home-monitor distribution. Survey results are forthcoming and will be presented at the conference.□□Conclusions:□Inclusion of eligible home draw patients creates only positive financial impact and balances any financial loss incurred by switching no more than 5% of clinic patients to home-monitoring. Parameters for patient eligibility were chosen based on current Medicare covered indications, the largest insurance group, as well as, the patient assessment. Conclusions regarding survey results are forthcoming and will be presented at the conference.

Learning Objectives:

Describe methods for identifying patients eligible for INR self-testing and implementation of an INR self-testing program in a pharmacist-managed anticoagulation clinic.

Discuss the financial analysis used to financially justify an INR self-testing program in a pharmacist-run anticoagulation clinic.

Self Assessment Questions:

Which of the following characteristics is required by Medicare for patients to be eligible for INR self-testing?

A On warfarin therapy for less than three months for atrial fibrillation

B: Diagnosis of atrial fibrillation, venous thromboembolism (PE or DV

C: Diagnosis of atrial fibrillation, hypercoaguable conditions (cancer),

D: On warfarin therapy for less than three months for hip replacemen

In addition to financial analysis, a population analysis was performed based on insurance provider. Which was the most common population by insurance provider that was used for financial modeling of f

A Medicaid

B Self Pay

C Commercial insurance

D Medicare

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-460 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A TWICE-DAILY CARTFILL PROCESS

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Purpose:□The purpose of this project is to implement twice-daily cartfill at the University of Wisconsin Hospital and Clinics (UWHC) to reduce medication returns and waste, and facilitate reallocation of pharmacy technician time within the technician staffing model.□□Methods:□UWHC uses centralized automated dispensing technologies (robot and carousels) to fill inpatient medication orders and restock decentralized automated dispensing cabinets (ADC). Most scheduled maintenance doses are dispensed from the central pharmacy as a part of a 24-hour cartfill that utilizes these technologies. During cartfill, the robot picks an average of 5,000 doses, or 2,084 line items. The cartfill is sent from the electronic medical record to the pharmacy automation to begin filling around midnight. Cartfill medications are dispensed for doses scheduled to be administered 1200 that day through 1159 the following morning. Consequently, cartfill doses are dispensed 12-36 hours prior to their scheduled administration time. Contents of patient cassette drawers are added to the drawer already present on the unit; a true exchange does not occur. Discontinued and omitted medications are removed from patients drawers daily by decentrally-functioning pharmacy technicians. □Over time, UWHC has experienced a decrease in length-of stay and an increase in both frequency of order changes and overall volume. As such, the length of time to complete cartfill and the number of doses returned to the central pharmacy have increased, justifying an in-depth analysis and redesign o the cartfill process. □This project aims to coordinate all steps of twice-daily cartfill implementation, taking the entire med-use system into consideration and modifying it to support a twice-daily cartfill. The project scope includes formulating a plan, implementing, and assessing the overall impact of the change from once-daily to twice-daily cartfill and all ancillary changes made to batch times for sterile products, ADC refills and repackaging. □□Results & Conclusions:□To be presented.

Learning Objectives:

Describe the benefits of changing to a twice-daily cartfill operation

Discuss operational considerations when planning for a change from a once-daily to a twice-daily cartfill operation.

Self Assessment Questions:

What benefits are anticipated from changing from a once-daily to a twice daily cartfill operation at UWHC?

A Decrease medication returns to the central pharmacy

B: Ratio of first doses to cartfill doses will decrease

C: Quantity of missing medications will decrease

D: All of the above

What other operational components must be considered when planning for a change from a once-daily to a twice-daily cartfill operation?

A Delivery of medications to the floor – both at cart times and betwe

B Batch times for sterile products, oral extemporaneous doses and a

C Central and decentral staffing model

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-708 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING A PHARMACIST MANAGED ANTICOAGULATION SERVICE TO A NURSE AND PHYSICIAN MANAGED ANTICOAGULATION SERVICE

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Purpose: To determine the quality and efficacy of pharmacist managed anticoagulation compared to nursing and physician staff managed anticoagulation services.□□Methods: A retrospective data analysis was conducted on patients who are currently on indefinite warfarin therapy, had warfarin for a minimum of 6 months, are currently monitored by pharmacists at Group Health Cooperative anticoagulation clinic and have been managed by nurses and physicians prior to management by pharmacists. Nurse and physician managed anticoagulation was definec as "pre-period" from April 1st, 2011 to July 31st, 2011 and pharmacist managed anticoagulation was defined as "post-period" from May 1st, 2012 to August 31st, 2012. Data collection was conducted by an information analyst who ran a query against the anticoagulation patient dataset. Data on warfarin indication, date of INR drawn, dates of INR results, INR values, goal therapeutic INR range, scheduled recheck dates, anticoagulation initiation comments, member number and episode ID were collected. The primary outcome measured the percentage of INR in therapeutic goal range and the secondary outcome measured the percentage of INR greater than or equal to 4.0. Both outcomes were further broken down by warfarin indication. Data analysis included mean comparison, standard deviation, and the statistical significance of outcomes using Students t-test.□□Results: The overall primary (pre 64.7% vs. post 66.4%, p-value = 0.363) and secondary (pre 3.1% vs. post 3.4%, p-value = 0.558) outcomes had no statistically significant difference. By indication, DVT showed statistically significant improvement for pharmacists in the primary (pre 56.6% vs. post 66.3%, p-value = 0.031) and secondary outcomes (pre 7.2% vs. post 3.0%, p-value = 0.043) as did HVR in the primary outcome (pre 49.5% vs. post 56.8%, p-value = 0.025). Other indications showed no significant differences. □□Conclusions: Pharmacist managed anticoagulation services is equivalent in quality and efficacy compared to physician and nursing staff managed anticoagulation services.

Learning Objectives:

Review the quality of pharmacist managed anticoagulation services compared to nursing and physician managed anticoagulation services

Define parameters to assess the quality and efficacy of anticoagulation management services

Self Assessment Questions:

Which warfarin indication has a goal INR of 2.5-3.5

A Pulmonary Embolism

B: Deep Vein Thrombosis

C: Heart Valve Replacement

D: Joint Replacement

Which parameters are appropriate to be used to evaluate the quality of anticoagulation management?

A Percentage of time in goal INR range

B Percentage of time in panic range

C Percentage of warfarin follow up time period that are 4 weeks

D A and B

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-462 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ESTIMATION OF THE NET CLINICAL BENEFIT AND THE RISK OF STROKE AND BLEEDING EVENTS IN PATIENTS WITH ATRIAL FIBRILLATION

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Purpose□The decision to anticoagulate an atrial fibrillation (AF) patient requires an assessment of the stroke risk using CHADS2, CHA2DS2-VASc risk calculator and the bleeding risk, using the HAS-BLED calculator, to determine the net clinical risk (the difference between the stroke and bleeding risk). Current AF guidelines do not provide recommendations on how to integrate these risk scores to decide whether or not to anticoagulate an AF patient. This retrospective project seeks to propose a clinical decision tool that estimates net clinical benefit from anticoagulation and propose antithrombotic therapy based on this risk assessment.□□Methods□This retrospective project will compare the actual stroke and bleeding events for AF patients admitted during 7/1/2001 to 8/30/2012 who are or are not on antithrombotic therapy. Patients will be, stratified according to their stroke and bleeding risk, and then compared against a matched cohort of AF patients who were event-free. The primary endpoint is the composite of hospitalization and death for stroke, transient ischemic attack, or a major bleeding complication. Baseline characteristics, including stroke risk (CHADS2, CHADS2-Vasc), bleeding risk (HASBLED), and net clinical benefit (net stroke risk minus net bleeding risk) will be compared between the event and the event-free group annually for a minimum of 6 months. □□Results: □Data is currently being collected □□Conclusion: □No conclusion is available as data collection is currently being conducted.

Learning Objectives:

Define the stroke and bleeding risk score of an AF patient using the CHADS2, CHADS2VASc and HASBLED tool

Classify which patient will benefit from antithrombotic therapy based on their calculated positive net clinical benefit after taking into account their stroke and bleeding risk.

Self Assessment Questions:

An 80 year old female with a past medical history of diabetes, stroke, heart failure, and hypertension, was admitted for dehydration secondary to diarrhea that started 2 days ago. On admission, her v

A Her stroke and bleeding score is 4 points and 2 points respectively

B: Her stroke and bleeding score is 4 points and 3 points respectively

C: Her net clinical risk is positive and hence she would benefit from a

D: A and C

Using the table on the estimated stroke and bleeding risk, which patient(s) will need antithrombotic therapy?

A 80 year old AF female with a past medical history of stroke, diabet

B 75 year old AF female with a past medical history of mitral valve re

C A and B

D None of the above

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-461 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF MEDICATION-RELATED INTERVENTIONS BY A PHARMACIST DURING HOSPITAL DISCHARGE IN A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: The objective of this analysis is to track and categorize the interventions performed by clinical pharmacists during pharmacist-led discharge counseling and perform a cost analysis to estimate the savings associated with these interventions. Methodology: Clinical pharmacists responsible for medication reconciliation and discharge counseling will be educated how to appropriately and uniformly track their interventions performed at discharge through the use of a Microsoft Excel spreadsheet. After a two month period of recording interventions, the interventions will be placed into one of three categories: major, moderate, and minor interventions. The hospital electronic record system will be utilized to perform a retrospective chart review of patients to assist in categorization of interventions. Major interventions are those that have potential to prevent readmission, moderate interventions have potential to prevent a primary care provider or urgent care visit, and minor interventions likely would not have prevented an adverse drug event or harm to the patient. Each of these interventions will be assigned a fixed cost avoidance amount and the total potential savings will be calculated. Results: Data collection and evaluation are currently in progress. Project results will be presented at Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Explain differences between the categories of interventions made by pharmacists at hospital discharge.

Discuss the impact of involving a clinical pharmacist in medication reconciliation and counseling at hospital discharge.

Self Assessment Questions:

Which of the following is a potential benefit to involving clinical pharmacists in medication reconciliation and counseling at hospital discharge?

A Contributing to facility costs

B: Assisting in preventing hospital readmissions

C: Increased time spent at discharge

D: No benefits have been shown to date

Of the following, which pharmacist intervention would be most likely to prevent a hospital readmission?

A After speaking with a provider, discontinuing aspirin and warfarin tl

B Reminding a provider to reorder a probiotic at discharge that a pat

C Calculating that a ciprofloxacin prescription for osteomyelitis shoul

D Discontinuing a prescription for cholecalciferol after speaking with

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-828 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZATION OF LINEZOLID-ASSOCIATED THROMBOCYTOPENIA IN END-STAGE LIVER DISEASE PATIENTS

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Although linezolid is efficacious in treating multidrug resistant, gram-positive organisms, its hematologic toxicities such as thrombocytopenia can become treatment-limiting. Current package guidelines do not recommend the need for dosage adjustment in patients with renal and hepatic disease. However, recent publications suggest an accumulation of linezolid in these populations, which may also be associated with increased rates of thrombocytopenia. The hematologic characteristics of decompensated cirrhosis such as baseline thrombocytopenia and clotting factor deficiences already place patients at high risk of bleeds. Worsening of thrombocytopenia secondary to linezolid may further increase this risk. This is a single-center, retrospective, matched-cohort chart review aimed at exploring the incidence, severity, onset, and resolution of thrombocytopenia in decompensated cirrhotic patients while on linezolid. Possible risk factors to developing thrombocytopenia will also be elucidated. Adults admitted to the University of Illinois Hospital from September 2007 through August 2012, and having received at least 4 doses of linezolid will be included for screening. Case subjects selected will have decompensated cirrhosis as evidenced by having hepatic encephalopathy, esophageal varices, or ascites. Each case subject will be matched one-to-one with a control subject who has received linezolid during this study period but does not have evidence of cirrhosis. The primary outcome for this study is the percentage of subjects who experienced a greater than 30% decrease in platelets from baseline. Secondary outcomes include time to reach and recover from a > 30% decrease in platelets, the total percentage decrease in platelets, and the number and type of bleed events experienced. The chi-square test or Fischers exact test will be used for categorical variables and the Students t-test will be used for continuous data. Potential risk factors for development of thrombocytopenia will be determined via logistic regression analysis. Data collection and evaluation are currently in progress.

Learning Objectives:

Explain the mechanism of linezolid-associated thrombocytopenia.

Identify risk factors in decompensated cirrhotic patients for bleed events

Self Assessment Questions:

What is the mechanism thought to be associated with most cases of linezolid-associated thrombocytopenia?

A Linezolid causes direct bone marrow toxicity leading to decreased

B: Linezolid binds to platelet membrane glycoproteins, creating immu

C: Linezolid causes idiopathic splenomegaly , resulting in increased s

D: Linezolid binds to platelet factor 4 (PF4), creating an immunogenic

Which of the following are risk factors for bleeding in decompensated cirrhotic patients?

A Decreased production of clotting factors leading to coagulopathy

B Baseline thrombocytopenia due to decreased thrombopoietin

C Propensity to develop large esophageal varices

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-463 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF EFFECTIVENESS OF A PHARMACIST LED TRANSITION OF CARE CHECKLIST ON HOSPITAL READMISSION RATES IN AN URBAN TERTIARY HOSPITAL

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Purpose: The goal of health care providers is to improve health care outcomes and reduce readmissions by transitioning the care from an inpatient to outpatient setting. This study is being conducted to determine the impact of a pharmacy led Transition of Care (TOC) bundle checklist on readmission rate in patients admitted to Henry Ford Hospital with a heart failure (HF) exacerbation. Methods: Patients admitted for HF exacerbations will be screened for inclusion by use of an automated alert in the clinical pharmacy system and medical record review by the investigators. Patients meeting all inclusion criteria will be enrolled into either the control (Standard of Care) or intervention (TOC Bundle Checklist) arm in a randomized, controlled fashion using a randomization generator in a 1:1 ratio. Patients randomized to the intervention arm will be provided with the clinical services of the checklist. The TOC checklist consists of several components upon hospital admission, throughout the hospital stay, and prior to discharge. These consist of medication reconciliation by pharmacy (to verify accuracy of the physician conducted medication reconciliation) and resolution of identified discrepancies with the medical team, evaluating and optimizing HF medications, educating patients on their HF medications and ensuring the outpatient treatment plan is clear at discharge. The interventions and recommendations will be communicated to the primary team verbally and through an electronic note which will be uploaded in the hospitals electronic medical record. The primary outcome is 30-day all-cause hospital readmission. Secondary outcomes will include HF medication optimization and reconciliation as well as HF education. The sample size needed to detect a 80% power in the primary outcome is 540. Results: Preliminary findings will be presented at the Great Lakes Conference. Conclusion: Not available

Learning Objectives:

Describe the components of a pharmacy led Transition of Care (TOC) checklist

Discuss components of the checklist that aim to have an impact on re-admission rates

Self Assessment Questions:

Which of the following components of the TOC checklist are pharmacists responsible for during an encounter with a patient randomized to the intervention arm?

A Patient education
B: Medication history and reconciliation
C: Optimizing heart failure medications
D: All of the above

What component of the bundle checklist aims to improve health care outcomes in patients with heart failure?

A Patient education
B Optimizing heart failure medications
C Medication reconciliation
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-709 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TIGECYCLINE USE AND OUTCOMES IN A MATCHED COHORT OF TRANSPLANT PATIENTS WITH POLYMICROBIAL INFECTIONS

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Purpose: Solid organ transplant (SOT) patients are at particularly high infection risk and subsequent sequelae. In the post-transplant period, polymicrobial intra-abdominal infections (pIAI) are a significant complication that increasingly contain multi-drug resistant organisms. Few studies have compared broad spectrum antimicrobial therapies for outcome and safety in this population. The efficacy of tigecycline in the SOT population remains unstudied, even though there are many potential advantages to its use for pIAI over the standard use of multiple antibiotic therapies directed toward individual pathogens. Data supporting a safe and effective new monotherapy regimen for pIAI in this cohort is desired in order to improve healthcare utilization and patient convenience. Methods: SOT patients admitted to UWHC with a diagnosis of pIAI from January 1, 2007 to June 30, 2012 were included in this case-controlled retrospective study. Patients were matched by transplant type in a 1:2 ratio to: (1) those who received tigecycline treatment and (2) those receiving comparator therapy with a broad spectrum beta-lactam with or without daptomycin for confirmed pIAI. Eligible patients were identified through data inquiry and chart review was utilized to collect patient-specific information. Clinical efficacy was assessed 30 days after discontinuation of therapy. Commonly described adverse events attributed to antimicrobial therapy were collected, including incidence of Clostridium difficile diarrhea. Results/Conclusions: Thirty-six SOT patients received tigecycline during the study period. Seven patients were excluded for receiving tigecycline for indications other than pIAI. Patients in the tigecycline group were predominantly liver transplant recipients (62%) and were receiving tigecycline as consolidation therapy (41%). The most common bacterial pathogen isolated from these patients was vancomycin-resistant enterococcus (76%). Clinical improvement or cure was experienced by 25 (86%) patients receiving tigecycline. Data collection for the matched cohort of SOT patients receiving comparator antibiotics for pIAI is ongoing. Results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List potential benefits of utilizing tigecycline for intra-abdominal infections in solid organ transplant patients

Identify common microorganisms associated with intra-abdominal infections

Self Assessment Questions:

Potential benefits of utilizing tigecycline compared to other broad spectrum antibiotics for intra-abdominal infections in solid organ transplant patients include:

A Broad-spectrum antibacterial activity in a single drug
B: Less potential to promote Clostridium difficile infection
C: Improved tissue penetration
D: All of the above

The spectrum of activity of tigecycline includes all of the following intra-abdominal pathogens except:

A Escherichia coli
B Vancomycin-resistant Enterococcus (VRE)
C Bacteroides fragilis
D Pseudomonas aeruginosa

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-464 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY SERVICES IN AN OUTPATIENT NEUROLOGY CLINIC

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Purpose: Pharmacists have the potential to be a valuable part of the care of patients in a neurology clinic because most patients are on complex medication regimens. The purpose is the determine the sustainability of pharmacy services in an outpatient neurology clinic at a community health-system.□□Methods: Clinical pharmacists/residents were trained and available to provide clinical pharmacy services in the outpatient neurology clinic once weekly from October 2012 to June 2013. Training included reviewing reference materials, outlining the physician staffing model and team structure, and reviewing daily workflow. Daily workflow includes medication reconciliation, patient counseling, answering drug information questions, patient education and documenting interventions in the electronic medical record, attending patient appointments with physicians, and attending one-on-one patient/pharmacist appointments as requested by physicians. Additional activities the pharmacist participates in include educational inservices to medical assistants and physicians and educational sessions for patients. Data collected includes the total number of patients seen, medication reconciliations performed by a pharmacist, discrepancies identified after medication reconciliation performed by medical assistants and reviewed by a pharmacist, number of drug information questions from providers and patients, formal medication counseling requests by providers, number and type of recommendations made, whether recommendations were accepted or rejected, total time spent by pharmacist per patient visit in minutes, and educational activities provided. In March 2013, an anonymous survey will be sent out to medical assistants and physicians to determine their satisfaction with the pharmacy services provided in the neurology clinic. This data will help determine whether pharmacy services can be provided long-term in the neurology clinic.□□Results/Conclusion: Data collection is ongoing and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline daily pharmacist workflow in an outpatient neurology clinic

Discuss potential advantages of having a full-time pharmacist in the neurology clinic

Self Assessment Questions:

Which of the following is not included in the daily workflow of a pharmacist in an outpatient neurology clinic?

A patient counseling
B: medication reconciliation
C: diagnosing a patient
D: answering drug information questions from physicians

What is not a potential advantage of having a full-time pharmacist in the neurology clinic?

A physicians could devote more time to other clinic responsibilities
B patients will be more confused about their medications
C patients will be more likely to have an accurate, up-to-date medica
D pharmacists would have more time to education patients and answ

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-710 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF AMBULATORY MEDICATION RECONCILIATION IN A GERIATRIC PATIENT-CENTERED MEDICAL HOME

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Purpose: Medication reconciliation is important at transitions of care because lapses in safety and quality can lead to poor health outcomes, adverse events, and medication errors. The Rosa Parks Geriatric Clinic is a designated Patient-Centered Medical Home (PCMH) and post-discharge medication reconciliation is a service provided by pharmacy staff to optimize transitions of care, ensure accurate medication profiles, and improve health outcomes. The purpose of this study is to describe pharmacist interventions and evaluate healthcare outcomes in outpatients of this geriatric PCMH receiving post hospital discharge telephone medication reconciliation. □□Methods: This is a retrospective cohort study of patients who participated in a post-discharge medication reconciliation phone call prior to a PCP visit. Patients who receive the call from a pharmacist or pharmacy student are compared to a control group of patients who did not receive a phone call. Patients are excluded if they were discharged to a nursing home, long term care facility, hospice care, or a new primary care physician not affiliated with Rosa Parks Geriatrics Clinic. The primary outcome of total hospital use (ER visits, observation stays, and hospitalizations) within 30 days of the index admission is evaluated between the groups. Medication discrepancies at the time of transition of care are quantified and classified using a classification tool developed by Steven Chen, Pharm.D. at the University of Southern California. Pharmacists interventions and barriers to the medication reconciliation process are identified and described. The author acknowledges the assistance of MPRO and the Centers for Medicare and Medicaid Services (CMS) in providing data which made this project plan possible. The conclusions presented are solely those of the author and do not represent those of CMS and MPRO. □□Results/Conclusions: Final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the effect of post-discharge medication reconciliation phone follow up performed by pharmacists on patient and health care outcomes.

Describe the types of medication discrepancies and interventions made by pharmacists during post-discharge medication reconciliation phone follow up.

Self Assessment Questions:

Which of the following statements regarding medication reconciliation is correct?

A Medication reconciliation should be performed at every transitions
B: Medication reconciliation is no longer a component of the Joint Co
C: Inadequate medication reconciliation has no impact on patient car
D: A complete medication list comprises of a patient's prescription m

Which of the following are examples of medication reconciliation discrepancies?

A Omission
B Duplication of therapy
C Inadequate supply/difficulty obtaining supply
D All of the above

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-711 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A CRITICAL VALPROIC ACID CONCENTRATION PROTOCOL

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Background: Elevated valproic acid serum concentrations have been associated with life threatening hematologic, hepatic and neurological side effects, however, critical serum concentrations requiring immediate intervention have not been well-defined in literature. The current protocol at Cincinnati Childrens Hospital Medical Center (CCHMC) empirically defines critical values for valproic acid as 120 mg/L or greate requiring immediate notification of prescribers. Purpose: The objective of this study is to identify the mean serum concentration of valproic acid in patients experiencing potentially life-threatening side effects in order to revise our critical value protocol to better ensure patient safety and efficient utilization of healthcare resources. Methods: This study was approved by the Institutional Review Board. The electronic medical record was used to identify patients who received valproic acid treatmen at CCHMC with a valproic acid serum concentration equal to or above 120mg/L between January 1st 2012 and October 1st 2012. Patients older than 18 years of age were excluded. The following data was collected: demographics, valproic acid indication, dose and dosage form used, serum concentration of valproic acid, date and time of last valproic acid dose administrated before sampling, date and time of sample collection, liver function tests, platelet count, neurologic and hepatic side effects documented in clinical notes, clinical response to dose-related side effects, and concomitant medications that could affect valproic acid serum concentrations. Mean valproic acid serum concentrations of patients with and without potential life-threatening side effects was compared using a students t-test. Results: A total of 152 patients had a valproic acid serum concentration equal to or higher than 120 mcg/mL. Twenty-five of 152 patients (16.4%) experienced hepatic, neurological or hematological adverse reactions. The mean valproic acid serum concentration was 143.316.1 mcg/mL in the group with adverse reactions and 136.420.7 mcg/mL in the group without adverse reactions

Learning Objectives:

Describe potential life-threatening adverse effects associated with valproic acid in the pediatric population

Review therapeutic indications of valproic acid in the pediatric populatior

Self Assessment Questions:

Which of the following are potential dose-related adverse reactions of valproic acid?

A Neurological adverse reactions

B: Thrombocytopenia

C: Hepatic adverse reactions

D: A,B and C

Which of the following is the therapeutic indication of valproic acid in the pediatric population?

A Epilepsy

B Schizophrenia

C Major depressive disorder

D Anxiety

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-465 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF AN INPATIENT PHARMACY PROCESS IMPROVEMENT PLAN AT A UNIVERSITY TEACHING HOSPITAL

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Purpose: This project was conducted to identify areas for improvement in efficiency, quality, and accuracy throughout the medication use process at the University of Wisconsin Hospital and Clinics. An evaluation of the current strengths, weaknesses, and available resources throughout the inpatient pharmacy will identify areas for advancement in operational performance. These refinements, along with implementation strategies, will be included in the development of a process improvement plan. Methods: Direct observations were conducted in all areas of inpatient pharmacy operations including sterile products, compounding, unit-dose packaging, automated dispensing technology, and stockroom to summarize daily job responsibilities and document potential areas of waste in current processes. Using 5S workplace organization methods, staff identified necessary improvements by focusing on the creation of an orderly and standardized work environment. Data collected from the observations and 5S evaluation was included in an analysis of current strengths, weaknesses, opportunities, and threats (SWOT). The SWOT analysis emphasized opportunities for improvement and potential limitations to change. To gain further insight, inpatient pharmacy staff participated in an anonymous survey to share thoughts on enhancement of inpatient pharmacy operations. Value stream mapping highlighted value and non-value added activities performed by staff and how individual areas interconnect. Non-value added activities were acknowledged and a workgroup identified ways to improve efficiency in our current distribution system. Items identified in the SWOT analysis and value stream mapping were prioritized based on potential impact and ease of implementation. A workgroup developed a final process improvement plan, addressing both sustainability of changes and ways to foster continued improvement in the future. Results/Conclusions: The final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize examples of waste throughout the medication use process.

Describe lean principles that can be utilized to enhance inpatient pharmacy operations.

Self Assessment Questions:

Which of the following statements is correct regarding the types of waste found in the medication use process?

A Overproduction: Very few medications are returned to the inpatien

B: Motion: A hospital is building a new pharmacy utilizing an ideal fra

C: Inventory: According to a recent evaluation, the inpatient pharmac

D: Waste of correction: All medications delivered to patients in the ho

Which of the following are aspects of 5S workplace organization?

A Separate

B Sustain

C Stabilize

D Sparkle

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-712 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TRASTUZUMAB-ASSOCIATED CARDIOTOXICITY IN OVERWEIGHT AND OBESE PATIENTS

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Trastuzumab is a monoclonal antibody proven to increase disease-free and overall survival in patients with HER-2 positive breast cancer. For some patients, the benefits of trastuzumab treatment may be overshadowed by its cardiotoxic effects. While the cardiac effects have been widely studied, risk factors for developing these adverse outcomes are not well defined. The purpose of this study is to evaluate the incidence, presentation, and outcomes of trastuzumab-associated cardiotoxicity in overweight and obese patients with HER-2 positive breast cancer. By comparing the cardiac effects in normal weight, overweight, and obese patients, this study may determine if being overweight or obese are risk factors for developing new-onset cardiac dysfunction as a result of trastuzumab therapy. This retrospective cohort study involves the chart review of women with HER-2 positive breast cancer treated with trastuzumab for at least 3 months at a Henry Ford Health-System facility. Patients are excluded if they had a baseline LVEF <50% or body mass index (BMI) <18 kg/m2. Patients will be categorized into two groups based on BMI: normal weight and overweight/obese. Patients will be matched according to age at initiation of trastuzumab, treatment setting, and whether or not the patient was previously treated with an anthracycline. The primary outcome for this study is incidence of new-onset heart failure, defined as a significant decline in left ventricular ejection fraction. Additional data collection for patients during trastuzumab therapy will include documented diagnosis of new onset heart failure, arrhythmia or myocardial infarction, presence of comorbidities associated with increased risk of cardiac dysfunction, concurrent use of potentially cardio-protective medications, reason for trastuzumab doses held or discontinued, and documentation of disease relapse following trastuzumab therapy. Results and conclusions for this study will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the role of trastuzumab in treatment of breast cancer

Describe the typical presentation of trastuzumab-associated cardiotoxicity and design an appropriate monitoring plan for patients receiving this therapy

Self Assessment Questions:

Trastuzumab doses are determined by:

A Body surface area (mg/m2)

B: Fixed dose recommendations according to treatment setting

C: Actual body weight (mg/kg)

D: Fixed dose recommendations according to CrCl

How frequently is it recommended to assess left ventricular ejection fraction (LVEF) during trastuzumab treatment?

A Every 6 months

B Every 3 months

C Weekly

D Annually

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-466 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

WEIGHT BASED DOSING OF TISSUE PLASMINOGEN ACTIVATOR (T-PA) IN THE TREATMENT OF PULMONARY EMBOLISM

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Purpose□Pulmonary embolism (PE) is a potentially fatal condition requiring rapid clinical decisions. Hemodynamically unstable patients without contraindications require thrombolytic therapy, which works to rapidly dissolve the clot and improves pulmonary profusion and gas exchange. The typical dosing regimen for t-PA is 100 mg infused over 2 hours; however weight based dosing regimens have been studied. In a study by Wang and colleagues, they found patients less than 65 kg to have an increased risk of bleeding when receiving 100 mg of t-PA. Our study evaluates the appropriateness of uniform dosing in PE treatment. □□

Methods□This study is a retrospective, multicenter, chart review from 2006 to 2012 of patients who received alteplase for acute PE. Patients that are >18 or <89 years of age and received alteplase for acute PE were included in the review; prisoners, pregnant patients, patients admitted for cardiac arrest, or who died within 6 hours of infusion were excluded. Baseline demographics, pertinent laboratory results, clinical imaging along with relevant therapeutic treatments were collected for analysis. The primary outcome was risk of major bleeding within 72 hours of drug administration. Major bleeding was defined a priori as a decrease in hemoglobin of at least 2gm/dL requiring 2 units of packed red blood cells, intracranial hemorrhage, gastrointestinal bleed, or retroperitoneal bleed. Secondary outcomes include: secondary thrombolysis, rates of minor bleeding, length of stay, duration of mechanical ventilation, blood product administration and mortality. □

Major bleeding and secondary thrombolysis will be evaluated using mult variable logistic regression to determine risk based on the mg/kg of t-PA administered. Descriptive statistics will be utilized for all other outcomes Statistical analysis will be conducted using R 2.15.1, Stata 12, and SPSS 20.□□Results□To be presented at meeting.□□Conclusions□To be presented at meeting.

Learning Objectives:

Recognize indications and risks of tissue plasminogen activator (t-PA) for the treatment of pulmonary emboli.

Describe potential advantages for weight based dosing of t-PA in the treatment of pulmonary embolism.

Self Assessment Questions:

Ms. R is a 46 year old 61 kilogram female presenting to the emergency department with shortness of breath and the following vital signs: blood pressure 79/42, heart rate 127, and respiratory rate 19.

A Yes, she likely has a massive pulmonary embolism and you shoul

B: No, she is too small to be a viable candidate for alteplase.

C: Yes, she is likely having a submassive pulmonary embolism and y

D: Yes, her massive pulmonary embolism makes her a candidate for

Mr. K was treated with alteplase for his massive pulmonary embolism, ir general, his what is his risk for experiencing a major bleeding event?

A 0-1%

B 2-5%

C 5-15%

D >25%

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-467 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVED TRANSITIONS OF CARE: PHARMACIST GUIDED HANDOFF OF KEY PATIENTS AT HOSPITAL DISCHARGE

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Background:□Providing the highest quality health care should not stop once discharge orders are written; it should continue as we ensure the patient is prepared for the next step in their care. With recent changes in payer reimbursement, it is increasingly important to prepare patients for successful discharge, thereby preventing unnecessary readmissions for previously treated acute conditions or medication-related events. It is clear that pharmacists can play a key role in the discharge process. By inserting a pharmacist into the medication-related discharge process at Aurora BayCare Medical Center, we hope to ensure increased patient safety and better outcomes for our patients.□□Objective: □Improve the hospital medication-related discharge transition for patients by streamlining current medication-related discharge processes across an integrated health care system in an effort to decrease readmission rates and improve patient satisfaction.□□Methods:□Prior to process development, baseline data was collected on current medical/surgical readmission rates and patient satisfaction scores relating to medications on discharge. Based on this data it was decided to study all inpatient discharges from December 2012 through March 2013. Process development occurred by involving nursing, management, pharmacists, homecare and other internal and external stake-holders through several meetings. Pharmacy and nursing staff were educated on the pilot process. Pharmacists attempted to reconcile medications, counsel patients on all medications (new, changed, unchanged, and discontinued) and provide drug-related information to transitioning providers prior to discharge from ABMC. The primary outcome was to decrease readmission rates and improve patient satisfaction regarding knowledge about medications upon discharge from the hospital.
□□

Results: □Data collection and analysis are currently in progress. Results and conclusions will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the type and frequency of potential drug related problems of patient medication lists prior to pharmacist intervention.

Discuss the impact of pharmacist intervention and counseling on readmission rates, adverse drug events and patient satisfaction during and after hospital discharge.

Self Assessment Questions:

According to Eggink et al, pharmacist found medication errors on ___% of medication lists?

A 56%

B: 68%

C: 71%

D: 82%

Schnipper et al determined that pharmacists could avoid __ to __% of adverse drug events by providing medication reconciliation and counseling prior to hospital discharge.

A 3-5%

B 7-10%

C 6-12%

D 9-15%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-829 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF COMMUNITY-BASED CARE TRANSITIONS PROGRAM (CCTP) TO HIGH-RISK MEDICARE BENEFICIARIES

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Purpose: Approximately 20% of Medicare patients discharged from a hospital are readmitted within 30 days, costing over $17 billion annually. Ingalls Memorial Hospital is one of 82 organizations in the United States participating in the evidence-based Community-based Care Transitions Program for high-risk Medicare beneficiaries. Independent Living Systems, Inc., a healthcare services company, provided the framework through its primary care transition interventionPost-Acute Support System program, a patient-activation and education program. Sponsored by the Centers for Medicare & Medicaid Services, Ingalls Memorial Hospital implemented the program in June of 2012 to improve care transition from the hospital to home with the goal of reducing 30-day readmission rates by helping patients build self-care skills. □□The primary endpoint of this study is to determine the 30-day and 60-day readmission rates of Medicare patients. The secondary endpoint is to identify errors found in the medication reconciliation process at the time of hospital discharge, requiring pharmacist intervention.□□Methods: Each participant provides written informed consent agreeing to maintain a personal health record, learn how to identify disease-specific warning signs and how to respond, manage nutrition, accept medication counseling by a pharmacist, develop a medication self-management process, schedule and complete a follow-up visit with their physician, and allow a home visit and telephone calls from members of the care transition team. Inclusion criteria include Medicare patients ≥ 18 years old with a diagnosis associated with a high-risk of readmission and discharged to a home residence in one of 76 zip code areas, with access to a working telephone. Exclusion criteria include terminal conditions, psychiatric related index admission, cognitive impairment without an available willing caregiver, resident of long-term care facility, and discharge to a post-acute care setting. The following data will be collected: 30-day and 60-day readmission rates and number and type of medication errors found at the time of discharge.□□Results and Conclusion: To be presented.

Learning Objectives:

Identify the six main components of the Post-acute Support System (PASS) associated with preventing avoidable readmissions after being discharged from a hospital.

List the services provided to the patient by the care transition team.

Self Assessment Questions:

Which of the following components of the Post-acute Support System refers to patients being knowledgeable about their medications, including indications, dosing regimen, and common adverse effects?

A Patient health record

B: Red flags

C: Home and community-based services

D: Medication self-management

Which of the following services do patients who consent to the Community-based Care Transitions Program receive after being discharged from the hospital?

A Free transportation to and from follow-up appointments with physic

B Discounted medications

C Free medications

D Home visit by a pharmacist

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-713 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE DESIGN, IMPLEMENTATION, AND ASSESSMENT OF A HIGH-TOUCH ORAL ONCOLYTIC NURSING ADHERENCE PROGRAM IN A SPECIALTY PHARMACY

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Purpose: With the escalating number of oral oncolytics, nursing adherence programs are being utilized more for select therapies within specialty pharmacy settings. Yet evidence supporting their ability to improve patient outcomes is limited. This study aims to provide data on the effectiveness of a call-based adherence program in improving quality of life and satisfaction with pharmacy care in cancer patients receiving oral everolimus therapy. Secondary objectives will assess the programs ability to improve medication adherence, persistency, and adverse effec management. The outcomes of this study will be used to validate the services provided by a specialty pharmacy and further define effective interventions within this patient population.□□Methods: This prospective randomized controlled study will implement a unique oral oncolytic adherence program for patients receiving oral everolimus therapy with a cancer-related ICD-9 diagnosis. Patients who meet inclusion criteria wil be randomized 2:1 into an adherence group or standard of care. Standard of care will consist of pharmacy technicians setting up prescription deliveries and offering pharmacist consultation. The high-touch program will consist of a series of five additional calls over a 90 day period by a team of oncology adherence nurses, with an opt-out option. The program is designed to help patients maximize adherence and manage common side effects through education and supportive interaction. The EORTC QLQ-C15-PAL quality of life survey will be administered to all patients at the initiation of therapy and at weeks 8 and 12. Patients will also complete a modified Functional Assessment of Chronic Illness Therapy (FACIT) questionnaire at weeks 8 and 12. Adherence will be determined via medication procession ratios and self-reports. Additional outcomes will include therapy persistency, medication discontinuation, dose modifications, and reported adverse drug events.□□Results: Results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize outcomes of adherence programs in specialty pharmacy settings.

Identify the role of everolimus in cancer therapy.

Self Assessment Questions:

Which of the following is used to assess adherence in specialty pharmacy settings?

A EORTC-QLQ-C15-Pal

B: Mpr

C: FACIT-SWiP

D: ADAS-Cog

Which of the following is a Food and Drug Administration (FDA) approved indication for everolimus?

A Metastatic colorectal cancer

B Castrate-resistant prostate cancer

C Multiple myeloma

D Renal cell carcinoma

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-714 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROCALCITONIN TO ASSIST IN ANTIMICROBIAL STEWARDSHIP

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Rapid assessment, diagnosis, and treatment of infections are paramoun to the outcomes of the critically ill. Infectious etiologies carry a high mortality and must be identified early; however, many patients present with questionable signs and symptoms of infection. Nonspecific markers of infection such as fever, leukocytosis, and C-reactive protein (CRP) are standards used in the work up of these patients. Interest in procalcitonin (PCT), a sensitive and specific biomarker for bacterial infection, has grown in recent years. The objective of this study is to determine the current utilization of the PCT assay at a Level 1 Trauma Center hospital.□□Patients to be included in this study will be any patient with a procalcitonin assay ordered from January 2012 through December 2012. Exclusion criteria are patients who have not had a procalcitonin level ordered. A retrospective review will be performed in order to assess current prescribing behaviors for patients with a procalcitonin assay drawn during their hospital course. Data collected in this study will include: patient demographics, infectious diagnosis, specific SIRS criteria met for diagnosis in septic patients, vital signs, complete blood count, basic metabolic panel, PCT, CRP, lactate, urinalysis, antimicrobials prescribed, duration of antimicrobials, results of bacterial cultures, acquired clostridium difficile infection within 90 days of hospitalization, 90-day hospital readmission to Advocate Christ, and same-admission mortality. The investigators will also assess which prescriber groups have ordered procalcitonin, whether there was a treatment failure requiring escalation of antimicrobial therapy, and the length of stay for each patient. Data will be analyzed to assess if there is a correlation of PCT with infectious etiology, severity of infection, and antimicrobial initiation and duration.□□Results of this study will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current laboratory markers used in the setting of infection

Discuss reasons why procalcitonin may be appropriate for addition to the standard work-up of a patient with a suspected infection

Self Assessment Questions:

Which of the following is a diagnostic used to assist in the work-up of an infected patient?

A Temperature

B: White blood cell count

C: C-reactive protein

D: All of the above

What are some reasons a procalcitonin assay should be considered in addition to all other standard labs to assist in antimicrobial stewardship?

A Procalcitonin is specific to bacterial infections

B Procalcitonin can help differentiate between infectious and non-inf

C Procalcitonin values increase with increasing severity of infection

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-715 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARING PATIENTS AND FOURTH YEAR PROFESSIONAL PHARMACY STUDENTS PERCEPTIONS OF COMMUNICATION AND CONFIDENCE IN THE AMBULATORY CARE SETTING

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Purpose: Communication and clinical skills are important in developing the patient-pharmacist relationship to enhance patient care. As fourth year professional pharmacy students progress through their advanced pharmacy practice experiences (APPEs), their approach to patient care evolves. The performance of these students has been routinely evaluated by patient satisfaction and perception surveys, as well as, preceptor skills assessments. Minimal research has been performed in the ambulatory care setting evaluating students self-assessment of communication and confidence following each patient interaction or comparing the student self-assessment to the patients perceived experience. The aims of this study are to: describe the differences between the overall patient and student perception of communication and confidence following a student-led patient interview, assess each individual students aggregate self-perception of communication and confidence, and compare the aggregate patients perceptions to each students self-perception of communication and confidence during the first and last week of independent patient interviews. Methods: Approval from the institutional review board from all institutions was obtained before initiating the study. Signed consent was obtained from fourth-year professional pharmacy students at Midwestern University, who are completing their chronic care rotation at either of the two participating ambulatory care clinics. Surveys are distributed and completed by both the student and patient on the first day the student interviews patients independently. The surveys are distributed for 4 consecutive days from the start of the first independent interview (first week), and then again during the last 4 consecutive days of interviews (last week). The patient and student surveys issued contain two sections: 1) 12 questions for the assessment of communication (n=7) and confidence (n=5) and 2) a section on demographic information. Descriptive statistics will be used to report results of the overall patient perceptions and student perceptions of communication and confidence. Results/Conclusion: Data collection and analysis are ongoing.

Learning Objectives:

Identify the different domains of patient care.

Discuss the findings from prior literature regarding patient satisfaction surveys on professional graduate students performance.

Self Assessment Questions:

Which one of the following is a domain of patient care?

A Mental health care

B: Pharmaceutical care

C: Preventative care

D: Physical care

From prior literature, the patients' perceptions regarding their interaction with professional graduate students are generally:

A Negative

B Positive

C Mixed of negative and postive

D Undetermined

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-716 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ENOXAPARIN USE AND OUTCOMES IN PATIENTS WITH AND WITHOUT RENAL IMPAIRMENT

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Purpose: Patients with chronic kidney disease (CKD) or receiving hemodialysis are at high risk for both stroke and venous thromboembolism. While anticoagulation therapy is frequently necessary in these patients for both treatment and prophylaxis of thromboembolic disorders, challenges arise due to the increased risk of bleeding and prevalence of hemorrhagic stroke also associated with CKD. Little evidence currently exists supporting dosing regimens and monitoring approaches in the setting of severe renal impairment or hemodialysis as this population is typically excluded in clinical trials. While renally cleared low molecular weight heparins, such as enoxaparin, must be used with caution in this population, they have advantages of predictable anticoagulation response and ease of use in the ambulatory setting. The purpose of this study is to evaluate safety and efficacy outcomes of patients on enoxaparin therapy with and without renal impairment, defined as a creatinine clearance (CrCl) <30 mL/min and/or receiving hemodialysis vs. patients with a CrCl ≥30 mL/min. Methods: A retrospective chart review of veterans at Jesse Brown VA Medical Center with an outpatient enoxaparin prescription started between January 1, 2006 and December 31, 2007 will be conducted. Patients with CrCl fluctuating between ≥30 ml/min and <30 ml/min, never receiving or missing >20% of prescribed enoxaparin doses, receiving enoxaparin therapy inpatient, concomitantly using unfractionated heparin, fondaparinux, or dalteparin, or having previous heparin-induced thrombocytopenia will be excluded. Data for individual patients will be collected for the duration of enoxaparin therapy (without a gap in therapy >14 days) plus a 30-day period following the completion of therapy, up to six months. The primary endpoint will be major bleeds and secondary endpoints will include minor bleeds, stroke/TIA/venous thromboembolism, mortality, and appropriateness of enoxaparin dosing. Results: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

List the approved enoxaparin doses for venous thromboembolism prophylaxis and treatment

Identify current American College of Chest Physicians (CHEST) guideline recommendations for the use of enoxaparin in patients with impaired renal function

Self Assessment Questions:

Which of the following is the FDA approved enoxaparin treatment dose for patients with a CrCl <30 mL?

A 1 mg/kg subcutaneously Q12H

B: 1 mg/kg subcutaneously Q24H

C: 1.5 mg/kg subcutaneously Q12H

D: 1.5 mg/kg subcutaneously Q24H

Current American College of Chest Physicians (CHEST) guidelines recommend which of the following for enoxaparin dosing and monitoring in patients with impaired renal function?

A No renal adjustment necessary; consider monitoring INR levels

B Renally adjust; consider monitoring PTT levels

C Renally adjust; consider monitoring anti-Xa levels

D Enoxaparin should not be used in patients with CrCl <30 ml/min

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-717 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST-PROVIDED VS. PHYSICIAN-PROVIDED WARFARIN MANAGEMENT OF INPATIENT INTERNAL MEDICINE AND SURGICAL PATIENTS IN A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: At the Richard L. Roudebush Veterans Affairs Medical Center inpatient warfarin is primarily managed by physicians with input from clinical pharmacists. In an effort to standardize anticoagulation therapy and to improve patient safety, a pharmacist-run warfarin dosing service was implemented on the surgical ward and on one of five internal medicine teams. The purpose of this study is to retrospectively examine whether the outcomes achieved by the pharmacy warfarin service are noninferior to those achieved by the current physician-driven practices. Methods: This retrospective, IRB-approved study included inpatient medicine and surgical patients receiving warfarin between January 1, 2011 and December 31, 2012. Patients were excluded if they were located in the ICU, on argatroban, or admitted for less than 48 hours. Primary endpoints included percentage of time with therapeutic INR and percentage of first post-discharge INRs within therapeutic range. Secondary endpoints included number of INR values obtained during inpatient admission and number of visits to warfarin clinic within 30 days post discharge. The students t test was used to evaluate continuous data; categorical data was analyzed using the Chi-square or Fishers exact test. Preliminary Results and Conclusions: Data collection is ongoing; results and conclusions to be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the elements of performance for the Joint Commission National Patient Safety Goal regarding anticoagulation (NPSG.03.05.01).

Identify advantages of pharmacist vs. physician management of inpatient warfarin demonstrated in retrospective studies.

Self Assessment Questions:

Which of these is included as an element of performance for NPSG.03.05.01?

A A clinical pharmacist should monitor patients receiving anticoagula
B: Institutions should take action to improve anticoagulation safety pr
C: Pharmacists should provide education about the need for follow-up
D: A patient's INR should be recorded daily in the medical record.

Which of the following has been shown in retrospective studies to be an advantage of pharmacist management of inpatient warfarin?

A Increased frequency of INR monitoring
B Improved transition to outpatient follow-up at discharge
C Increased time to therapeutic range
D Both B & C

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-468 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF IMPLEMENTING A CLOSED-SYSTEM TRANSFER DEVICE SYSTEM FOR CHEMOTHERAPY PREPARATION AND ADMINISTRATION

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Purpose: The 2004 National Institute for Occupational Safety and Health (NIOSH) alert stated worker exposure to hazardous drugs, such as chemotherapy, is a persistent problem. In order to decrease adverse health risks, NIOSH recommended considering the use of closed-system transfer devices (CSTD) for hazardous medication preparation and administration. The objective of this project is to assess two CSTD products available on the market and to implement a CSTD system for chemotherapy preparation and administration at Froedtert Hospital.

Methods: The process for selection of a CSTD product incorporated an analysis of product efficacy, ease-of-use at the institution, and cost. After evaluation of current literature for efficacy of CSTD systems available on the market, selection was narrowed to Equashield and PhaSeal. Ease-of-use was assessed by test piloting each product for two weeks at Froedtert Hospital. Baseline data collected prior to piloting included a staff survey to evaluate perceptions of hazardous exposure in the workplace, chemotherapy waste, and preparation time. After each pilot a staff survey was utilized to analyze opinions on ease-of-use, impact on workflow and waste. Cost analysis was assessed by comparing the price quote of each product. Results: Baseline staff perceptions revealed that pharmacists and nurses were concerned about the level of contamination of hazardous materials, such as chemotherapy, in the workplace. The results of the post-pilot surveys exposed that nurses, pharmacists, and pharmacy technicians favored the Equashield CSTD product. The results from the waste and preparation time data collection were inconclusive. Conclusion: Froedtert Hospital selected Equashield as the CSTD product of choice. Cost negotiations are currently in process. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the purpose of implementing closed-system transfer devices for chemotherapy preparation and administration.

Identify positives and negatives of each of the piloted closed-system transfer device products.

Self Assessment Questions:

Which of the following is a reason to implement closed-system transfer devices for chemotherapy preparation and administration?

A The 2004 National Institute for Occupational Safety and Health rel
B: Studies have shown that the implementation of a closed-system tr
C: Closed-system transfer devices are required in any institution that
D: A and B

Which of the following was found to be a positive characteristic of the Equashield closed-system transfer device product?

A The 60 milliliter syringe was easy to use for chemotherapy prepara
B Pharmacy technicians and nurses felt safer using the Equashield®
C Pharmacy technicians thought that the Equashield® product was e
D B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-718 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF POTENTIALLY INAPPROPRIATE PRESCRIBING IN VETERANS AFFAIRS PATIENTS RESIDING IN NURSING HOMES USING STOPP/START CRITERIA

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Purpose: Medication utilization is high among geriatric patients, but the number of medications prescribed to elderly patients residing in nursing homes is up to four times higher than their community-dwelling counterparts. Potentially inappropriate medications (PIMs) and underutilization of potentially beneficial medications can lead to increased morbidity and mortality as well as an escalation in healthcare costs. Little is known about inappropriate prescribing and resource utilization in VA Ann Arbor Healthcare System (VAAAHS) contract nursing homes. Therefore, this gap in knowledge warrants further investigation to ensure veterans are receiving quality and safe care. The primary objective of this study was to determine the prevalence of potentially inappropriate medications and prescribing omissions in geriatric veterans residing in VAAAHS contract nursing homes using STOPP/START criteria. Secondarily, the financial impact of potentially inappropriate prescribing for these veterans was evaluated.□□Methods: An observational chart review using STOPP/START criteria was conducted over a 3 month period from August 1, 2012 to October 31, 2012 to assess the appropriateness of medication regimens used in the care of geriatric veterans residing in ten VAAAHS contract nursing homes. The STOPP/START criteria were applied to each veterans mos recent medication list obtained from the contract nursing homes. The VAAAHS computerized patient record system (CPRS) was used to supplement the data from the contract nursing homes where necessary. Veterans placed in nursing homes for respite care and those who did no have a VA primary care physician or who were not followed by the Geriatrics Clinic were excluded from the study. Descriptive analysis will be conducted to evaluate the primary and secondary objectives.□□Results/Conclusions: Data analysis is currently in progress. Results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe inappropriate prescribing in the elderly

Discuss the current literature using the STOPP/START criteria in nursing homes

Self Assessment Questions:

Which of the following factors predispose geriatric patients to inappropriate prescribing?

A Multiple disease states

B: Multiple medications

C: Pharmacodynamic changes

D: All of the above

Which of the following best describes the definition of a Potentially Inappropriate Medication (PIM)?

A A medication that is not clinically indicated

B The risks outweigh the benefits

C A medication that is not cost-effective

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-469 - L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

WHATS THE IMPACT? UTILIZATION REVIEW OF SIX MONTHS OF VALGANCICLOVIR PROPHYLAXIS FOR CYTOMEGALOVIRUS IN TRANSPLANT PATIENTS

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Purpose: Prophylaxis of cytomegalovirus with antiviral therapy is known to lower the risk of cytomegalovirus disease. In the absence of prophylaxis, cytomegalovirus infection generally occurs in the first three months post-transplant, when the immunosuppressive regimen is often the most intense. However, high burdens of late-onset cytomegalovirus disease have been demonstrated since the implementation of universal prophylaxis in abdominal transplantation. Recently, Humar and colleagues (IMPACT) demonstrated that continuing valganciclovir prophylaxis for 200 days significantly reduced the incidence of cytomegalovirus viremia for up to one year, when compared with 100 days of prophylaxis in high-risk patients. As a result of the IMPACT trial, in May of 2010, the UW Hospital transplant service created and implemented a new protocol for cytomegalovirus prophylaxis. This extended antiviral prophylaxis with valganciclovir from 90 to 180 days in all recipients of abdominal organ transplants for which it was indicated. The purpose of this study is to determine if patients at UW are able to complete the full six months of valganciclovir prophylaxis, including an evaluation of the rate of discontinuation and associated risk factors.
□□

Methods: This is a retrospective chart review evaluating the utilization of six months of valganciclovir prophylaxis for cytomegalovirus in abdominal transplant recipients. Results were analyzed using descriptive statistics. A total of 142 patients met study inclusion. The primary outcome measure assessed was discontinuation rate of valganciclovir.
□□

Results/Conclusions: Valganciclovir prophylaxis was continued for the full duration of six months in approximately 80% (113/1142) of patients. Incidence of cytomegalovirus infection at one year was 6% (7/113) in those who completed six months of valganciclovir prophylaxis and 14% (4/29) in those whose prophylaxis was terminated early. A total of 46 out of 142 patients (32%) were leukopenic during the prophylactic period and dose reduction of mycophenolate occurred in 76% of these patients

Learning Objectives:

Review the duration of cytomegalovirus prophylaxis achieved by abdominal transplant recipients at our institution

Identify the incidence of leukopenia in patients receiving vanganciclovir prophylaxis at our institution

Self Assessment Questions:

Common adverse effects of valganciclovir include:

A hypoglycemia

B: bone marrow suppression

C: epistaxis

D: transaminitis

The following subset of patients is considered to be at highest risk for development of cytomegalovirus after transplantation based on serostatus:

A Donor-reactive/Recipient-reactive

B Donor-nonreactive/Recipient-reactive

C Donor-nonreactive/Recipient-nonreactive

D Donor-reactive/Recipient-nonreactive

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-470 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSOCIATION OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) NASAL COLONIZATION WITH CULTURE RESULTS IN CRITICALLY ILL PATIENTS

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Purpose: Hospitalized patients are routinely screened for MRSA colonization in the nares via nasal swab. The nasal swab is a rapid test that is used to determine the presence or lack of MRSA colonization. Although this test may identify patients who are colonized with MRSA, it is uncertain how precisely nasal colonization correlates with an initial MRSA positive culture. The primary objective of this study is to determine the association of MRSA nasal colonization with the incidence of initial cultures positive for MRSA. Secondary objectives will be to determine the association of MRSA nasal colonization with the incidence of initial cultures positive for MRSA in patients whom MRSA infection is suspected and to determine the accuracy of MRSA nasal colonization for predicting MRSA positive cultures in critically ill patients and in a subgroup of critically ill patients in whom MRSA infection is suspected upon admission.□□Methods: This is a retrospective, single-center cohort study of patients admitted to the 24 bed mixed medical and surgical ICU at Akron General Medical Center between July 1, 2010 and July 1, 2012. Eligible patients will be identified via ICU admission data and included in the study if they were 18 years of age or older, were admitted directly to the ICU, and were screened for MRSA nasal colonization via nasal swab within 48 hours of ICU admission. Patients will be excluded if they did not have a culture performed within 48 hours of the nasal swab. Data collection will include demographics, MRSA nasal swab data, culture data, and data regarding administration of antibiotics with MRSA coverage. Data will be reported as sensitivity, specificity, positive predictive value, and negative predictive value.□□Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall the risk of systemic infection in patients with MRSA nasal colonization compared with MSSA nasal colonization.

Recall recently reported rates of MRSA infection in critically ill patients.

Self Assessment Questions:

For patients with MRSA nasal colonization, what is the risk of developing systemic infection compared with patients colonized with MSSA?

A 4-fold decreased risk

B: 2-fold decreased risk

C: 2-fold increased risk

D: 4-fold increased risk

From 2000-2005, MRSA accounted for what percentage of Staphylococcus aureus infections in critically ill patients?

A Less than 20%

B 20%-40%

C 40%-60%

D Greater than 60%

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-719 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISK OF GRAFT-VERSUS-HOST DISEASE WITH RITUXIMAB-CONTAINING CONDITIONING REGIMENS IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION: A RETROSPECTIVE COHORT STUDY

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Purpose: Graft-versus-host disease (GVHD) represents a major cause o morbidity and mortality in allogeneic hematopoietic stem cell transplant (alloHSCT) patients. Although primarily thought of as a T lymphocyte-driven process, there is growing evidence that B lymphocytes also play a critical role in the pathogenesis of acute GVHD. Rituximab, a chimeric monoclonal antibody directed against CD20 (expressed on B lymphocytes), has been used with modest success in the treatment of chronic GVHD in several small case series. The purpose of the current study is to evaluate the efficacy of rituximab-containing conditioning regimens in decreasing acute GVHD in alloHSCT patients.□□Methods: Institutional Review Board approval has been obtained for this retrospective cohort study. Patients who had an alloHSCT performed at the University of Michigan Health System from 2006-2010 were screened for inclusion. Patients less than 18 years old at the time of transplant, patients who received rituximab for indications other than the conditioning regimen, patients who received alemtuzumab or anti-thymocyte globulin in the conditioning regimen, and patients who were enrolled in other GVHD prophylaxis clinical trials were excluded. Patients were divided into two cohorts, based on the presence or absence of rituximab in the conditioning regimen. Patients in the two cohorts were matched for intensity of the conditioning regimen (myeloablative or non-myeloablative), extent of HLA matching, and donor type (related or unrelated). The primary outcome, the incidence of grade II-IV acute GVHD, will be compared between cohorts using a chi-squared test. Secondary outcomes that will be compared between cohorts include the incidence of any grade acute GVHD, the incidence of grade III-IV acute GVHD, and acute GVHD by subtype (skin, liver, or gastrointestinal).
□□
Results and Conclusion: Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the potential role of B lymphocytes in the pathogenesis of acute GVHD

Describe the evidence supporting the potential use of rituximab for the prevention of GVHD

Self Assessment Questions:

Which of the following is correct regarding the potential role of B lymphocytes in the pathogenesis of acute GVHD?

A B lymphocytes directly attack endothelial cells, releasing cytokines

B: T lymphocytes directly attack endothelial cells, releasing cytokines

C: B lymphocytes serve as antigen-presenting cells and activate CD4

D: CD4+ T lymphocytes serve as antigen-presenting cells and activat

Based on the study by Ratanatharathorn and colleagues, the use of rituximab within 6 months prior to the conditioning regimen may be associated with which of the following:

A A decrease in the incidence of chronic GVHD

B A decrease in the incidence of grade II-IV acute GVHD

C An increase in the incidence of grade III-IV acute GVHD

D A decrease in the risk of primary disease relapse

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-471 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF EXTENDED INFUSION PIPERACILLIN-TAZOBACTAM VERSUS TRADITIONALLY DOSED CEFEPIME IN PATIENTS WITH NOSOCOMIAL PNEUMONIA AND SUSCEPTIBLE PATHOGENS

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Purpose: Nosocomial pneumonia is associated with high mortality rates and is becoming more difficult to treat due to emergence of organisms with increasing rates of antibiotic resistance and higher minimum inhibitory concentrations (MICs). In an effort to overcome this problem of increasing MICs, there has been an interest in trying to optimize antimicrobial pharmacodynamics (i.e. the relationship between drug exposure and antimicrobial activity). -lactam antibiotics display time-dependent bactericidal activity, with the most important determinant of antibacterial efficacy being the duration of time plasma concentrations exceed the MIC of the pathogen. One way to optimize this principle is by using extended infusions. To date, current literature has evaluated use of extended infusion piperacillin-tazobactam in gram-negative infections from multiple sources and in non-critically ill patients. There is not enough external validity from current literature to apply to critically ill patients diagnosed with nosocomial pneumonia. The objective of this study is to compare treatment outcomes of extended infusion piperacillin tazobactam versus traditionally dosed cefepime in patients with gram-negative nosocomial pneumonia.□□Methods: This is a retrospective cohort study approved by the University of Illinois Institutional Review Board. Patients who received extended infusion piperacillin-tazobactam or traditionally dosed cefepime for treatment of nosocomial pneumonia will be enrolled. Nosocomial pneumonia will be diagnosed by bronchoalveolar lavage or tracheal aspirate and the gram-negative pathogens must be susceptible to piperacillin-tazobactam and cefepime. The primary outcome of the study is in hospital mortality. Secondary outcomes include: intensive care unit (ICU) mortality, length of mechanical ventilation, length of ICU stay and length of hospital stay. Duration of antibiotic treatment, isolated pathogen and MICs will also be evaluated. Appropriate statistical tests will be used to evaluate the study outcomes.□□Results: Pending

Learning Objectives:

Explain the pharmacodynamic principle that best describes beta-lactam antibiotics

Recognize that nosocomial pneumonia has high mortality rates and list two (2) reasons why it is becoming more difficult to treat

Self Assessment Questions:

Beta-lactam antibiotics are best characterized by the following pharmacodynamic principle:

A Concentration-dependent
B: Time-dependent
C: Auc:Mic
D: Dose-dependent

Nosocomial pneumonia is associated with high mortality rates and is becoming more difficult to treat due to emergence of organisms with increasing rates of antibiotic resistance and:

A higher minimum inhibitory concentrations
B lower minimum inhibitory concentrations
C higher T>MIC
D higher AUC:MIC

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-472 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREDICTORS OF CARDIAC ARREST IN INTENSIVE CARE UNIT PATIENTS WITH SEVERE SEPSIS AND SEPTIC SHOCK

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Purpose: □To identify predictors of cardiac arrest in septic shock patients in the intensive care units.□□Methods: □This is an IRB-approved, retrospective, observational case-control study performed via chart review using the Henry Ford Hospital electronic medical records database. All patients who are greater than or equal to 18 years of age admitted to an ICU with severe sepsis or septic shock who have a cardiac arrest event will be included in the study from 2008 to 2011. If the patient experienced more than one cardiac arrest event, only the firs event will be included. Patients will be excluded if the cardiac arrest occurred within 30 minutes after arrival to the ICU. Baseline characteristics will be collected for each patient, including age, gender, race, APACHE II score, location, and date and time of arrival to the ICU. Vital signs and neurological status will be collected at admission to the ICU and 48 hours, 24 hours, 12 hours, 8 hours, and 30 minutes prior to cardiac arrest. Vasopressor data will include time of initiation and discontinuation, maximum dose, and the number of vasopressors used. Concomitant medications collected are anti-infectives, anti-arrhythmics, antiadrenergics, antipsychotics, and hyperkalemia-causing medications. The cause of sepsis, cause of cardiac arrest, and outcome of arrest will be noted. Patients will be matched in a 1 to 1 ratio by initial APACHE II score.□□Descriptive statistics (mean, standard deviation, and percentages) will be used to describe the baseline characteristics of the patients. The chi-square or Fisher exact will be used to compare categorical data and the t-test will compare continuous variables. A multivariate analysis will be conducted to identify independent risk factors for cardiac arrest.□□Results and Conclusions:□Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify frequently used medications in severe sepsis and septic shock patients that are related to cardiac arrhythmias and cardiac arrest.

Explain the use of the Modified Early Warning Score in predicting cardiac arrest.

Self Assessment Questions:

Which of the following are commonly prescribed medications in intensive care unit patients that have an adverse effect of cardiac arrhythmias?

A Macrolides
B: Azole antifungals
C: Cephalosporins
D: A & b

The Modified Early Warning Score (MEWS) utilizes which of the following to predict an increased risk of death?

A Heart rate
B Diastolic blood pressure
C Neurological status
D A & c

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-473 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREDICTORS OF OUTCOMES AFTER LIVER TRANSPLANT IN THE SETTING OF CHRONIC OPIATE USE

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Purpose: Multiple studies have determined that excessive alcohol consumption is an independent risk factor for death in liver transplant recipients, regardless of pre-transplant diagnoses. Investigators have also identified history of non-alcohol substance abuse as an independen risk factor for alcohol use post-transplant. Little research however, has focused on the impact of illicit drug use on outcomes in this patient population. The intent of this project is to determine if narcotic use prior to liver transplantation is predictive of narcotic use post-transplant and if varying degrees of narcotic use prior to liver transplant influence morbidity and resource utilization. □□Methods: This is an Institutional Review Board approved retrospective, single-center, chart review of all adult liver transplant recipients at the University of Kentucky Medical Center between July 1, 2009 and June 30, 2012. Exclusion criteria include residence outside of Kentucky, combined organ transplant, follow-up at an outside clinic, and being deceased. Objective data quantifying narcotic use before and after transplant will be obtained via an electronic state-wide controlled substance prescription record. Databases providing information include Organ Transplant Tracking Record, the University Health System Consortium, and the electronic medical record. The primary objective is the difference in narcotic pain medication use pre- and post-liver transplant, standardized to morphine equivalents. Secondary objectives include: resource utilization (readmission rate, LOS) and morbidity (infections and other complications).□□Results: Data collection and analysis are currently underway.

Learning Objectives:

List the most common indications for liver transplantation in the United States.

Identify known risk factors for poor outcomes in the liver transplant population.

Self Assessment Questions:

Which of the following is not a risk factor for poor outcomes post- liver transplant?

A MELD score less than 20

B: Excessive alcohol use

C: Depression

D: Chronic liver failure secondary to Hepatitis C

The two most common indications for liver transplantation are:

A Hepatocellular Carcinoma and chronic liver failure secondary to He

B Chronic liver failure secondary to Hepatitis C and TPN/ Hyperalime

C TPN/Hyperalimentation induced liver disease and Hepatocellular C

D Alcoholic liver disease and chronic liver failure secondary to hepat

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-474 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE IMPACT OF GERIATRIC SERVICE ADMISSION ON A GERIATRIC RESIDENTS DRUG BURDEN INDEX

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Background: When elderly are prescribed medications with anticholinergic or sedative effects, certain risks arise such as prolonged sedation, lower memory test scores, an increased risk of falls, and increased risk of cognitive and functional impairment. The Drug Burden Index (DBI) is a score that calculates a medications anticholinergic and sedative burden. A higher DBI score has been associated with poorer physical function and decreased cognitive performance.□□Purpose: To evaluate the change in DBI score in a geriatric patients admitted to the long-term care (LTC) unit at the Edward Hines, Jr. VA Hospital and understand the impact of the healthcare team in decreasing the DBI score. □□Methods: This is a retrospective, observational chart review of patients 65 years of age and older admitted to the LTC unit who receive an initial review by the interdisciplinary team, as well as medication reviews conducted by a pharmacist, and who have been on the service for at least 60 days. The initial DBI score upon admission will be compared to the DBI score upon first pharmacist review (at 14-21 days), second pharmacist review (~1 month from first pharmacist review), and discharge or third pharmacist review (~1 month from second pharmacist review), whichever occurs first, and the difference will be calculated. Information collected includes: reason for admission, demographic information, total number of disease states, and total number of medications. Medications with anticholinergic and sedative properties, including dose and dose adjustments of these medications, and total number of falls during data collection period will also be assessed. Depending on the type of data, various tests will be used to compare outcomes, including means and standard deviations, a paired t test, chi square, or Fishers exact test.□□Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List available criteria to evaluate medication lists for drug burden in the elderly.

Recognize the association between anticholinergic medications and hospital-related outcomes.

Self Assessment Questions:

Which of the following criteria can be utilized to assess for BOTH anticholinergic and sedative burden in elderly patients?

A Acs

B: Acbs

C: Dbi

D: Acove

The use of anticholinergics in elderly hospitalized patients has been associated with which of the following?

A Decreased risk of falls

B Increased risk of mortality

C Increased survival at 60 days

D Decreased hospital length of stay

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-830 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF SELECTIVE SEROTONIN REUPTAKE INHIBITOR USE ON THE EFFECTIVENESS OF CLOPIDOGREL THERAPY FOLLOWING CORONARY STENT PLACEMENT

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Purpose: Clopidogrel is used following cardiac stent placement to reduce the risk of recurrent ischemic events including stent restenosis, myocardial infarction and stroke. Clopidogrel requires enzymatic activation by cytochrome P450 2C19 (CYP2C19) in order to exert its antiplatelet effect. Proton pump inhibitors are known to inhibit CYP2C19, and may prevent the conversion of clopidogrel to its active metabolite. Studies investigating this interaction have produced conflicting results, although some suggest that concomitant use may result in increased ischemic events. It is currently unknown whether other medications with similar inhibition profiles, like selective serotonin reuptake inhibitors (SSRI), will show a similar effect. □□Methods: Prior to commencement, this study was approved by the Institutional Review Board. Gundersen Lutherans electronic health record was used to identify patients who underwent coronary stent placement from December 1, 2007 - August 31, 2011, based on ICD-9 codes. Patients were eligible for inclusion if they were hospitalized for percutaneous coronary intervention (PCI) with stent placement and discharged on clopidogrel. Those patients discharged taking an SSRI were placed in the combination arm. Exclusion criteria include age less than 18 years, PCI without stent placement, less than 12 months of clopidogrel use or less than 12 months of follow up, and initiation of an SSRI within 12 months of stent placement. The primary endpoint of this study is the occurrence of major cardiovascular events, defined as hospitalization for stroke, transient ischemic attack, myocardial infarction, sudden cardiac death, coronary artery bypass grafting or stent restenosis during the 12-month follow-up period. Secondary endpoints will evaluate for differences in the primary endpoint and differences in the primary outcome between individual SSRIs. Patient demographics, stent type, current medications and comorbid conditions will also be collected to identify potential confounding factors.□□Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Describe the metabolism of clopdogrel into its active metabolite

Describe the mechanism by which SSRIs may reduce the efficacy of clopidogrel

Self Assessment Questions:

Which of the following best describes the biotransformation of clopidogrel?

A Clopdogrel is hydrolyzed by plasma esterases into its active metab
B: Clopidogrel undergoes a three-step, cytochrome P450 mediated, a
C: Clopidogrel undergoes a two-step activation, which is mediated pri
D: Clopidogrel is readily bioactive and does not require metabolism

Which of the following is true regarding SSRIs and clopidogrel?

A Fluvoxamine produces the greatest amount of CYP 2C19 inhibition
B Literature exists showing a link between concomitant SSRI/clopido
C Sertraline produces the greatest amount of CYP2C19 inhibition co
D There is extensive literature showing a link between concomitant S

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-475 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZATION OF PHARMACY SERVICES AND EVALUATION OF PHARMACIST WORKLOAD BEFORE AND AFTER THE IMPLEMENTATION OF COMPUTERIZED PROVIDER ORDER ENTRY IN A HOSPITAL SETTING

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Purpose: □To evaluate the utilization of hospital pharmacists in terms of how they spend their time, the occurrence of severe adverse medication events, and their perceptions regarding computerized provider order entry (CPOE) in both the pre and post-implementation period.□□Methods: □Institutional review board exemption was applied for and determined unnecessary due to the nature of the data being collected. Information is being collected electronically for time periods both pre and post implementation of CPOE. The health system database and pharmacy operating systems are being utilized to extract data. We will evaluate pharmacist time to verify orders, time spent on physician requests for pharmacy managed consultation services, the number of orders requiring pharmacist clarification or change, and the number of pharmacy to dose orders outside of approved medical staff protocols. In addition, we will analyze data in our electronic patient safety documentation software to compare the number of medication events associated with patient harm both pre and post CPOE implementation. Information will also be collected that summarizes pharmacists perceptions of CPOE before and after implementation.□□Results:□This study is in progress. The following data was collected before implementation of CPOE. The average time for a pharmacist to enter STAT orders was 8 minutes. Utilization of pharmacy consultation services indicated that pharmacists managed 42.5% of parenteral nutrition patients, 27.9% of patients managed for hyperglycemia, and no instances of pharmacy managed warfarin therapy. There were 32 requests for pharmacy to manage drug therapy for medications not outlined in medical staff approved protocols and 8.07x10-5 medication events associated with harm per adjusted patient day. The results and analysis for the post implementation period and pharmacist perception survey will be discussed at the 2013 Great Lakes Residency Conference.□□Conclusion:□This study is currently in progress.

Learning Objectives:

Identify the change in workload of hospital pharmacists with the implementation of CPOE.

Discuss pharmacist's perceptions of CPOE before and after implementation.

Self Assessment Questions:

1)Which of the following is correct regarding the change in workload for pharmacists after the implementation of CPOE?

A Pharmacists saw no change in workflow.
B: Utilization of pharmacy provided clinical services increased.
C: Utilization of pharmacy provided clinical services decreased.
D: Pharmacists were unable to handle the increased workload.

Which of the following statements is correct regarding pharmacists perceptions of CPOE?

A Before implementation, pharmacist perception of CPOE was very
B Pharmacist's perception of how they spend their day did not chang
C Pharmacists reported a significant amount of apprehension before
D Pharmacists had negative feelings about the hospital systems abil

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-720 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

BENCHMARKING OUTCOMES IN LIVER TRANSPLANT RECIPIENTS AT THE UNIVERSITY OF CHICAGO MEDICAL CENTER

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Purpose: The University of Chicago Medical Centers (UCMC) liver transplant program is the oldest in the Midwest and the fourth oldest in the nation. In 1989, UCMC performed the first successful living-donor liver transplant in the country. Over the last five years, UCMC has performed approximately 30 liver transplants annually. The Scientific Registry of Transplant Recipients (SRTR) was established in 1987 to compile a national database of solid organ transplantation statistics regarding graft and patient survival. According to SRTR data from January 1, 2009 through June 30, 2011, the one year graft and patient survival of liver transplant recipients at UCMC was 87.2% and 86.5%, respectively, which is similar to the national average. A limitation of the SRTR data is that it does not provide detailed information regarding center-specific variables affecting survival outcomes. The purpose of this study is to evaluate one year outcomes of liver transplant recipients at UCMC in comparison to outcomes presented in transplant literature. □□Methods: This study is a retrospective chart review of patients eighteen years or older who received a liver transplant at UCMC between January 1, 2009 and December 31, 2011. Patients who received multi-organ transplants will be excluded. Data collection includes patient demographic information and information regarding the following five domains: 1) graft and patient survival, 2) immunosuppression and rejection, 3) opportunistic infections, 4) hepatitis C virus recurrence, and 5) new onset diabetes after transplantation (NODAT). The primary objective is to determine causes of graft and patient loss, as well as the incidence of allograft rejection, post-transplant infections, and NODAT within the first year following transplant. Secondary objectives are to identify risk factors and assess the medication management of each primary objective. Data will be analyzed with descriptive statistics. □□Results: to be presented□□Conclusion: to be presented

Learning Objectives:

Identify how to prevent the most common infectious complications in liver transplant patients.

State the expected one year survival rate after liver transplantation in the United States.

Self Assessment Questions:

Which of the following medications is often used to prevent Pneumocystis jiroveci pneumonia (PJP) in liver transplant recipients?

A ciprofloxacin

B: sulfamethoxazole/trimethoprim

C: fluconazole

D: valgancyclovir

The one year survival rate after liver transplantation in the United States is estimated to be:

A 68%

B 78%

C 88%

D 98%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-476 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE COST-EFFECTIVENESS OF ALTERNATIVE EMPIRIC ANTIMICROBIAL TREATMENT OPTIONS FOR SUSPECTED ENTEROCOCCAL BACTEREMIA

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Purpose: Bloodstream infections represent nearly one third of hospital-acquired infections and are associated with significant morbidity and mortality. Enterococcus species are the fourth leading cause of bacteremia, and the rate of enterococcal antimicrobial resistance is rising. Furthermore, vancomycin resistant enterococcal (VRE) bacteremias have been associated with increased mortality, which makes the early, appropriate selection of antibiotics an important strategy in the treatment of these patients. The objective of this study is to determine the cost-effectiveness of various empiric treatment strategies for patients with suspected enterococcal bacteremia.□□Methods: This study is a pharmacoeconomic model simulation. A decision analysis model was constructed from the hospita perspective to assess the cost-effectiveness of alternative empiric treatment options for enterococcal bacteremia, including ampillicin, vancomycin, and VRE-active agents. The model was populated from available literature sources. Data included antimicrobial resistance patterns, mortality associated with early versus delayed effective antimicrobial therapy, and costs associated with the treatment of enterococcal bacteremia. Univariate sensitivity analyses will be utilized to assess the robustness of the decision analysis model and to determine the degree to which model uncertainties influence outcomes. A probabilistic sensitivity analysis will also be performed with varying parameters in 10,000 Monte Carlo simulations. □□Results: While daptomycin costs more than vancomycin or ampicillin, early effective antimicrobial therapy in patients with VRE significantly decreases mortality. Results of our preliminary model predict that empiric initiation of a VRE-active antimicrobial, such as daptomycin, may be a cost-effective strategy in the treatment of enterococcal bacteremia. However other factors influencing cost, such as length of hospitalization, significantly influence the cost-effectiveness of different strategies in our model. Data analysis is currently ongoing. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the impact that antimicrobial resistance has on the treatment and outcomes associated with enterococcal bacteremia.

Discuss the cost-effectiveness profile of empiric antimicrobial options in the treatment of enterococcal bacteremia.

Self Assessment Questions:

Which of the following statements is true regarding the prevalence of enterococcal bacteremia:

A Patients with a bacteremia due to vancomycin-sensitive enterococ

B: E. faecalis and E. faecium have similar antimicrobial resistance pa

C: Enterococcus species are the 4th leading cause of bacteremia in N

D: Only 20% of enterococcal species isolated from blood cultures are

When assessing cost-effective therapeutic options for the empiric treatment of suspected enterococcal bacteremia, which of the following is true:

A The early initiation of effective antimicrobials has limited impact or

B The daily cost of daptomycin is more than six times the daily cost

C The majority of E. faecalis isolates are resistant to vancomycin an

D The treatment duration is longer for ampicillin when compared to v

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-477 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE CLINICAL IMPACT OF FDA GUIDELINES FOR SIMVASTATIN DRUG INTERACTIONS

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Purpose: To evaluate the mean change of low-density lipoprotein (LDL) cholesterol after dose reduction of simvastatin or statin substitution following new FDA recommendations due to drug interactions. Secondary objectives of this review are to determine if differences in number of patients at LDL goals exist, to identify the interventions made and the clinical impact on corresponding changes based on the therapeutic alterations. In addition, to evaluate the frequency of myopathies, myalgias and rhabdomyolysis through documented evaluation of muscle complaints and pertinent labs. □□Methodology: A retrospective chart review will be completed for up to 300 patients on simvastatin in combination with verapamil, diltiazem, or gemfibrozil prior to June 2011 with a FLP before and at least 6 weeks after therapy modification up to October 1, 2012. Eligible patients will be chosen for review via computer generated randomization. Patients will be identified based on use of simvastatin dose > 10mg a day with verapamil or diltiazem. Those on gemfibrozil and any dose of simvastatin will also be identified for this study. Patients will be excluded if the medications (simvastatin, diltiazem, verapamil and/or gemfibrozil) were not filled in the 4 months prior to pre and post change FLP. The average LDL change before and after therapy modification will be determined by comparing LDL before therapy change and at least 6 weeks after therapeutic intervention for each patient. Data collected will include age gender, indication for use (verapamil, diltiazem, gemfibrozil, simvastatin), duration of use and dose for interacting medications, interventions made including dose escalations or de-escalations of statin if applicable, LDL goals if pre-specified by the provider, concomitant therapy with any other lipid agents, documented muscle complaints and time to post therapy change lipid panel or evaluation. Laboratory data will include lipid panels, AST, ALT and CK.□□Results/Conclusions: The results and conclusion are pending.

Learning Objectives:

Identify therapeutic interventions made following updated dosing recommendations for the use simvastatin in combination with verapamil, diltiazem and gemfibrozil.

Discuss the impact of lipid management interventions on individual LDL goals.

Self Assessment Questions:

What is the maximum daily dose of simvastatin that is recommended with verapamil or diltiazem per FDA recommendations?

A 10 mg daily
B: 20 mg daily
C: 40 mg daily
D: 80 mg daily

What is the LDL goal for a patient with one coronary heart disease (CHD) risk equivalent?

A less than 190 mg/dL
B less than 160 mg/dL
C less than 130 mg/dL
D less than 100 mg/dL

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-478 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

STRESS ULCER PROPHYLAXIS: ASSESSMENT OF PRESCRIBING IN CRITICALLY ILL PATIENTS AT TRANSITIONS OF CARE

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Purpose: Stress ulcer prophylaxis (SUP) using pharmacologic agents has become the standard of therapy for critically ill patients. Studies suggest 40-70% of patients receive acid-suppressive medications during their hospitalization with higher percentages among those admitted to an intensive care unit (ICU). SUP, however, is not necessary for all patients due to relatively low rates of stress-related mucosal bleeding. Unwarranted therapy increases health care costs and is associated with an increased risk of hospital-acquired pneumonia, clostridium difficile-associated disease, and drug interactions. The purpose is to assess the appropriateness of stress ulcer prophylaxis prescribing at transitions of care: initiation in the ICU, transfer from the ICU to general inpatient care and hospital discharge at an academic medical center.□□Methods: The study is a retrospective analysis of patients admitted to a Froedtert Hospital ICU on or after November 1st 2011 and discharged from the hospital by December 31st 2011 focusing on the appropriate use gastric acid suppressants for SUP. Patients are stratified according to type of intensive care unit admission: surgical/trauma, medicine, neurosciences cardiovascular. The primary outcome is the percentage of critically ill patients inappropriately initiated on pharmacologic SUP in the ICU. Secondary outcomes include the percentage of critically ill patients started on prophylaxis in the ICU inappropriately continued on gastric-acid suppression upon transfer to general inpatient care followed by the percentage inappropriately prescribed gastric-acid suppression at hospital discharge. Results of this retrospective analysis will be used to identify the need for intervention to enhance appropriateness of therapy.□□Results/Conclusion: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the incidence of stress-related mucosal damage and clinically important bleeding

Describe potential adverse effects associated with unwarranted use of gastric-acid suppressants

Self Assessment Questions:

What is the incidence of clinically significant bleeding in patient not receiving stress ulcer prophylaxis?

A 1-6%
B: 6-12%
C: 12-24%
D: 24-50%

What adverse-effect is associated with unwarranted use of gastric-acid suppressants?

A peptic ulcer disease
B upper respiratory infection
C clostridium difficle-associated disease
D dyspnea

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-479 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREDICTORS OF VANCOMYCIN TREATMENT FAILURE FOR BACTEREMIA CAUSED BY COAGULASE-NEGATIVE STAPHYLOCOCCI (CONS): A NESTED CASE-CONTROL STUDY

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Purpose: Vancomycin dosing has been studied extensively in the treatment of methicillin-resistant Staphylococcus aureus; however, little guidance is available regarding vancomycin dosing for the treatment of infections caused by methicillin-resistant coagulase-negative staphylococci (MR-CoNS). The primary objective of this study is to evaluate patients with MR-CoNS bacteremia treated with vancomycin fo a potential association between vancomycin exposure and clinical outcomes.□□Methods: Patients with MR-CoNS bacteremia at the Detro Medical Center between March 2008 and December 2011 will be identified via the electronic medical record and the microbiology database. Patients meeting the following inclusion criteria will be selected for further analysis: age 18 to 89 years, received treatment with vancomycin for at least 72 hours, met at least two systemic inflammator response syndrome criteria within 24 hours of specimen collection, and had at least two sets of blood cultures with phenotypically identical MR-CoNS growth. Neutropenic patients, those without appropriately drawn vancomycin levels, and those without CoNS antimicrobial susceptibility data will be excluded. Cases and controls will be matched based on source of infection (foreign body-related or other), severity of illness (according to Pitt bacteremia score), requirement for renal placement therapy, and age. The primary outcome will be clinical failure, defined as presence of at least one of the following: change in treatment due to failure, readmission within 30 days with documented recurrence of infection, 30-day all-cause mortality, or signs/symptoms of infection persisting more than 24 hours following source control or more than 72 hours after initiation of therapy in patients without source control. Secondary outcomes will include nephrotoxicity, duration of bacteremia, duration of admission, and duration of vancomycin treatment. □□Results and conclusions: Will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the general management of CoNS catheter-related bloodstream infections.

Discuss the microbiology and pathogenesis of CoNS infections

Self Assessment Questions:

In patients with uncomplicated catheter-related bloodstream infections due to coagulase-negative staphylococci, Infectious Diseases Society of America guidelines recommend treating with antibiotics fo

A Five to seven days following catheter removal

B: Ten to 14 days from the first negative blood culture

C: Six to eight weeks from the first negative blood culture

D: Six to eight weeks from catheter removal

Based on the most recent National Nosocomial Infections Surveillance System Report, approximately what percentage of coagulase-negative staphylococci is methicillin-resistant?

A <20%

B 20 - 40%

C 40 - 60%

D 80 - 100%

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-480 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF A PHARMACIST BASED DISCHARGE COUNSELING PROGRAM ON HOSPITAL CONSUMER ASSESSMENT OF HEALTHCARE PROVIDES AND SYSTEMS (HCAHPS) SCORES

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Background: With the ongoing evolution of our healthcare system from a fee for service to a pay for performance model, the roles of pharmacist are likely to change. The implementation of the hospital consumer assessment of healthcare providers and systems (HCAHPS) survey, a survey that measures patients perceptions of their hospital experience, is a key factor in this reform. Beginning October 1st, 2012, all hospitals receiving funding from Medicare now have 1% of their reimbursement withheld. Reimbursement is reallocated to those hospitals that perform well on HCAHPS survey. Many studies have been conducted in the ambulatory setting showing the benefit of pharmacist involvement in medication management, however no current literature exist on the effects of pharmacists intervention on HCAHPS scores in the inpatient setting. □□Objective: Evaluate the effect of pharmacist based discharg counseling on overall HCAHPS scores, as well as composite scores of discharge information and medication communication, and 30-day readmission rates. □□Methodology: A prospective, observational study will be conducted to evaluate patient outcomes after receiving medication related discharge counseling from a pharmacist. The study population will include all patients 18 years or older, with a hospital stay of at least 24 hours, being discharged home from a cardiovascular surgery step-down unit at the Cleveland Clinic. Over a six month period all patients discharged from the intervention unit will receive counseling and will be compared to a similar control unit that will not receive counseling. Data will be collected regarding demographics, unit being discharged from, co-morbid disease states, number of medications at discharge, discharge diagnosis, length of hospital stay, and previous hospital admissions within the last 12 months, overall HCHAPS scores, medication communication composite HCAHPS scores, and discharge information composite HCHAHPS scores. □□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the effect HCAHPS scores will have on a health-systems reimbursement

Outline the research design and methods

Self Assessment Questions:

Beginning October 1st, 2012, what percentage of reimbursements is now withheld by CMS?

A 1%

B: 2%

C: 3%

D: 4%

What percentage of the Total Performance Score does the patient experience domain (HCAHPS) represent?

A 5%

B 15%

C 30%

D 50%

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-721 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL RELEVANCE OF TIME IN THERAPEUTIC RANGE: A COMPARISON OF USUAL CARE VERSUS A PHARMACOTHERAPIS MANAGED ANTICOAGULATION CLINIC

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Purpose: Time in therapeutic range (TTR) has been linked to clinical outcomes such as stroke, venous thromboembolism, and major hemorrhage. In 2008, patients on chronic warfarin therapy (n=76) in the Anticoagulation Clinic (AC) at the Monroe Clinic spent 64.2% of time in the therapeutic range (according to fraction of international normalized ratios (INRs)). The AC has now grown to over 300 patients. In the first phase of this retrospective chart review, TTR was determined for patients managed by pharmacists in the AC versus those managed by primary care providers in usual care (UC). The purpose of the second phase of this review was to compare thromboembolism and bleed rates between patients managed in the AC versus those managed in UC.

Methods: The electronic health record was queried for patients who received a prescription for warfarin from July 1, 2010 through July 31, 2011. Patients over the age of 18 who received warfarin for at least three months with a goal INR of 2-3, 2.5-3.5 or 1.8-2.4 were included. Patients were excluded if 56 days or more elapsed between INR values or if they were eligible for both AC and UC during the trial period. The TTR for each group was determined by a linear interpolation method based on the Rosendaal Method. The primary outcome for the second phase of the review was to compare thromboembolism and bleed rates between the two groups by collecting data on emergency department visits, hospitalizations, and clinic visits specifically related to thromboembolic or bleeding events. Secondary outcomes included the documentation of specific dosage instructions reaching the patient within 24 hours of an INR result and the percentage of patients with INRs obtained at least every five weeks. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the relationship between TTR and clinical outcomes

Identify potential benefits of a pharmacist-run anticoagulation clinic

Self Assessment Questions:

Of the following statements, which best describes the relationship between TTR and clinical outcomes?

A Achieving a higher TTR has been linked to better clinical outcomes
B: Achieving a higher TTR has been linked to poorer clinical outcome
C: Achieving a lower TTR has been linked to better clinical outcomes
D: No evidence of an association between TTR and clinical outcomes

Potential benefits of a pharmacist-managed anticoagulation clinic include which of the following:

A Reduction in the number of primary care physician office visits
B Decreased co-payments from prescription medications
C Improved documentation of indication, goal INR, and dosing instru
D Greater access and ability for patients to use home INR monitoring

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-481 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING PATIENT CHARACTERISTICS USED TO PREDICT SERUM VANCOMYCIN CONCENTRATIONS OUTSIDE OF GOAL RANGE

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Background/Purpose: Cabell Huntington Hospital Inc., (CHHI) pharmacists conduct physician-requested therapeutic drug monitoring for vancomycin. Published guidelines recommend serum vancomycin trough concentrations (VC) between 10 to 20 mg/L to optimize outcome. A retrospective audit identified 935 VC measured between January 1, 2012 and June 30, 2012; approximately 52% these values fell outside recommended range. Of those 935 VC, 12% were > 30, 22% were between 20.1-20.9, and 18% were < 10. This study will identify PDV predictive of an abnormal VC. Methods: A single-center retrospective, electronic chart review conducted at CHHI of patients with > 1 VC measured between January 1, 2012 and June 30, 2012. Based on VC, patients were classified into 3 groups: 1. VC > 30; 2. VC 10 to 20; and 3. VC < 10. Inclusion criteria were: 1. > 18 years old; 2. In-patient status; and 3. > 1 dose of vancomycin prior VC. Exclusion criteria were: 1. Cystic fibrosis; 2. Limb amputation; 3. Vancomycin dosed by outside facility; 4. VC 20.1 to 29.9; and 5. Inappropriately drawn VC. Variables collected: 1. Demographics (age, gender, ethnicity co-morbidities, height, weight, body surface area, body mass index, serum creatinine, blood urea nitrogen, creatinine clearance); 2. Indication for vancomycin; 3. Vancomycin loading dose; 4. Total daily maintenance dose of vancomycin; 5. Concurrent therapies that alter volume of distribution (vasopressors, blood products); and 6. Concomitant nephrotoxins (aminoglycosides, amphotericin; colistin; IV contrast). Results/Conclusions: Data collection and evaluation is currently in progress.

Learning Objectives:

Recognize factors that affect vancomycin pharmacokinetics and pharmacodynamics

Identify patient-dependent variables (PDV) that predict the probability of an abnormal serum vancomycin concentration

Self Assessment Questions:

What factor is associated with increased risk of nephrotoxicity?

A Total daily dose of vancomycin > 4 grams/day
B: Decreased SCr
C: Vancomycin MIC > 2
D: Short treatment courses (< 7 days)

What is the goal vancomycin concentration used to optimize outcome?

A > 30 mg/L
B 20.1-20.9 mg/L
C 10-20 mg/L
D < 10 mg/L

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-482 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RED BLOOD CELL LENGTH OF STORAGE AND DEVELOPMENT OF DEEP VEIN THROMBOSIS IN TRAUMA INTENSIVE CARE PATIENTS

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Purpose: Trauma patients are at increased risk of mortality secondary to pulmonary embolism (PE) arising from deep vein thrombosis (DVT). Current literature is inconclusive on whether the age of stored packed red blood cells (PRBCs) is a risk factor for development of DVT and PE and risk may be multi-factorial. Existing studies examined different population groups with varying definitions for "old" versus "fresh" stored PRBCs. The purpose of this study is to identify the incidence of DVT and PE in trauma ICU patients and whether the age of blood is a risk factor for DVT and PE. □□Methods: We will perform a retrospective chart review of trauma patients evaluating the age of blood transfused for risk of developing DVT and PE. This study has been IRB approved. Patients will be identified via the trauma registry from January 2005 through June 2012. Patients must have entered through the Akron General Medical Center emergency department and have been transferred to a critical care unit. For inclusion, each patient must have: a length of stay greater than 24 hours; a computerized tomography angiogram, ventilation perfusion scan, or lower extremity compression ultrasound at least once; and a minimum transfusion of five units leukoreduced PRBCs. Patient exclusion criteria are: less than 18 years old; pregnant; history of a clotting disorder; or known therapeutic anticoagulation during hospital stay for any reason other than treatment of newly developed DVT or PE. The incidence of DVT and PE will be determined. Patients will be divided into groups based on age of the PRBCs transfused. Other variables that will be collected for analysis include: patient demographics, all-cause mortality, injury severity scores other blood products received, DVT prophylaxis received, and type of injury sustained. □□Results/Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize current recommendations in the EAST and CHEST guidelines regarding non-pharmacologic and pharmacologic DVT prophylaxis in trauma patients.

State risk factors for development of DVT in trauma patients.

Self Assessment Questions:

1)According to the EAST guidelines, what is the current recommendation regarding the use of pharmacologic DVT prophylaxis in moderate to high risk trauma patients?

A Low dose unfractionated heparin if no contraindications

B: Low molecular weight heparins if no contraindications

C: Pneumatic compression devices alone

D: Vena cava filter

Which of the following is a risk factor for development of DVT in trauma patients?

A Alcohol consumption at time of injury

B BMI less than 26

C Family history of DVT

D Surgical procedures greater than 2 hours

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-483 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEXMEDETOMIDINES IMPACT ON MECHANICAL VENTILATION AND NEED FOR VASOACTIVE SUPPORT IN PATIENTS WITH LEFT VENTRICULAR ASSIST DEVICES

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Purpose: Little data exists comparing the efficacy and safety of sedatives used in the post-operative period for patients newly implanted with left ventricular assist devices (LVAD). In practice, propofol has become the standard of care for mechanically ventilated intensive care unit (ICU) patients requiring sedation. However, dexmedetomidine has demonstrated the potential to decrease time on mechanical ventilation and shorten ICU length of stay (LOS), with potentially fewer adverse drug effects compared to propofol. Therefore, in an effort to determine optimal sedative management in post-implantation LVAD patients, the outcomes of this study will evaluate if the use of dexmedetomidine can lead to earlier extubation and reduce cardiovascular adverse effects compared to the use of propofol without dexmedetomidine. Primary objectives are to 1) determine if patients who received dexmedetomidine had a reduction in mechanical ventilation days and 2) determine if the duration of vasoactive agents use was reduced with dexmedetomidine in the VAD patient population, both compared to the use of propofol alone.□□Methods: A retrospective chart review of post-operative adult patients who underwent a LVAD implantation and admitted to St. Vincent Hospitals cardiothoracic vascular transplant unit (CVTU) was conducted between October 1st, 2010 to September 30, 2012. Adult patients were included if they were on mechanical ventilation for 30 days or less and excluded if a sedative continuous infusion other than propofol or dexmedetomidine was utilized. Patients were stratified into two groups: a control group who did not receive dexmedetomidine during their hospitalization and a study group of patients who did receive dexmedetomidine. Daily median infusion rates and durations of sedative and vasoactive agents were collected from the patients electronic medical record while basic demographics and secondary outcomes were primarily collected from financial charge data.□□Results/Conclusions: Final results and conclusions will be presented at the Great Lakes Residency Showcase.

Learning Objectives:

Identify risk factors for LVAD patients having cardiovascular and respiratory complications.

Discuss the benefits of using dexmedetomidine as a sedative agent in LVAD patients.

Self Assessment Questions:

Adverse effects of propofol include all of the following except:

A Hypertension

B: Hypotension

C: Respiratory alkalosis

D: Bradycardia

Which of the following is a potential benefit of dexmedetomidine?

A Respiratory depression

B Induction of deep sedation

C Causative agent of delirium

D Facilitation of a natural sleep-wake cycle

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-484 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES ASSOCIATED WITH REDUCED CARBAPENEM USE IN PATIENTS WITH HEMATOLOGIC MALIGNANCIES AFTER THE IMPLEMENTATION OF A FEBRILE NEUTROPENIA CLINICAL PATHWAY

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Background: The Infectious Disease Society of America and the National Comprehensive Cancer Network clinical practice guidelines recommend administration of broad-spectrum antibiotics in high-risk cancer patients with febrile neutropenia (FN). Our institution implemented a FN clinical pathway recommending cefepime as the preferred empiric agent over previously recommended meropenem. Implementation of clinical pathways has been shown to impact antimicrobial utilization, decrease hospital stay and admissions, and decreased mortality. Previous studies evaluating cefepime against agents such as imipenem, meropenem, and piperacillin-tazobactam for FN found that cefepime is comparably efficacious and well tolerated. Prior studies have not assessed the impact of a FN management pathway recommending empiric cefepime over meropenem on clinical outcomes and rates of gram-negative resistance. Purpose: The primary objective is to determine if the use of cefepime as the preferred empiric beta-lactam for FN in patients with hematologic malignancies maintains positive patient outcomes compared to the empiric use of meropenem for this indication. The primary outcome assessed will be antimicrobial success rates. Secondary outcomes include median duration of antibiotic use for FN, length of fever, duration of neutropenia, 30-day inpatient all-cause mortality, empiric addition of vancomycin and/or aminoglycosides, and empiric addition of broad-spectrum antifungals. We also look to identify if rates of gram-negative multidrug resistance decreased with the reduction in carbapenem use in the study population. Methods: The proposed study is a single-center retrospective review including patients >18 years old with a hematologic malignancy and a diagnosis of FN within 12 months pre and 7 months post guideline implementation (March 2012). Patients will be excluded if they had hypersensitivity to beta-lactams precluding the use of meropenem or cefepime, and if they did not receive the preferred empiric antibiotic therapy based on current institutional protocol.

Results: The results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference

Learning Objectives:

Review prior literature comparing the use of beta-lactams in febrile neutropenia.

Discuss the impact on clinical outcomes of a febrile neutropenia management pathway recommending empiric cefepime over meropener

Self Assessment Questions:

Which class of agents is the preferred empiric treatment of febrile neutropenia based on IDSA/NCCN guidelines?

A Anti-pseudomonal beta lactams
B: 2nd generation cephalasporins
C: Fluoroquinolones
D: Aminoglycosides

What percent of patients with febrile neutropenia will have an established or occult infection?

A 90-100%
B 50-60%
C 10-20%
D 30-40%

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-485 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PATIENT ACCESS TO FREE NICOTINE REPLACEMENT PRODUCTS ON SMOKING CESSATION AND LONG-TERM ABSTINENCE

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Background: Effects of smoking result in unfavorable health outcomes for adult smokers with or without chronic diseases. Such effects impact the U.S. Economy both directly and indirectly; therefore, increasing smoking cessation awareness and initiation is necessary to reduce poor health outcomes and economic burdens. Purpose: The purpose of this study is to determine if providing free nicotine replacement products in addition to patient education following the Cooper Clayton Method, wil assist with a patients success in smoking cessation and long-term abstinence. Methods: The InterNational Center for Advanced Pharmacy Services (INCAPS) at the Sullivan University College of Pharmacy has arranged for approval of three 12-week pharmacist led smoking cessation sessions, with the first one beginning in September of 2012. INCAPS has arranged for an email notification of the sessions to be distributed through the Sullivan University system along with campus distribution of fliers to promote the service. Recruitment is aimed at students and employees of the Sullivan University system who are 18 years old or older currently utilizing nicotine products; however, the public is welcome to attend the pharmacist led sessions, as well. Once attendees agree to participate in the study, free nicotine replacement products (provided by our local Health Department) will be provided to attendees along with education (following the Cooper Clayton method). Attendees will be administered a brief survey regarding current nicotine use to identify appropriate nicotine replacement product selection and success rates will be tracked at the end of the 12-week session. Projected sample size for the study will be 100 attendees. A three and six-month follow-up survey regarding continued abstinence will take place via email/phone calls in order to track continued success rates. Results and Conclusions: Results and conclusion to be presented at Great Lakes Residency Conference.

Learning Objectives:

Discuss the various nicotine replacement products used in the completion of this project.

Review the dosages for the nicotine replacement products based on a patients current smoking habits.

Self Assessment Questions:

What is the starting dose of nicotine replacement therapy gum if a patient smokes < 25 cigarettes a day?

A 1 mg
B: 2 mg
C: 4 mg
D: 6 mg

Which of the following statements regarding the nicotine replacement therapy patch is TRUE?

A Use an area of skin on the lower body or the lower part of the arm
B Make sure the skin is clean, dry and intact
C Shave the area where the patch is going to be located
D Apply to skin even if there is inflammation, burn, or irritation

Q1 Answer: B Q2 Answer: B

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Activity Type: Knowledge-based Contact Hours: 0.5

INITIATION OF PHARMACIST-DRIVEN DISCHARGE PRESCRIPTION REVIEWS WITH INTERVENTIONS IN THE EMERGENCY DEPARTMENT: A PILOT PROJECT

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Purpose□Currently at Wheaton Franciscan - St. Joseph Campus, no official process exists for emergency department (ED) pharmacists to review discharge prescriptions. The objective of this pilot project is to initiate a process in which pharmacists review discharge prescriptions in the ED. Ultimately, the goal is to enhance patient care by preventing medication prescribing errors and thus improving patient safety.□Methods□A total of 1,032 discharge prescriptions were reviewed by the ED pharmacist from 1230-2300 seven days per week. The study was conducted from November 21 through December 15, 2012. The specifics of each intervention were documented in an electronic spreadsheet. Following data collection, the intervention rate was determined by dividing the number of interventions by the total number of discharge prescriptions reviewed. Finally, a survey was created for the ED staff to complete in order to assess their satisfaction with this project.□Results□Of the 1,032 prescriptions reviewed, 25 required some type of intervention, yielding an intervention rate of 2.42%. Based on the total number of interventions, the main two medication classes were antibiotics and analgesics (with intervention rates of 36% and 28%, respectively). The two major categories of interventions included renal dose adjustments of antibiotics and dosing frequency adjustments for analgesics. The majority of discharge prescriptions reviewed were for adult patients (90.2%) versus pediatric patients (9.8%). Ninety three percent of interventions were completed in less than one minute and < 1% were completed in four to six minutes. A satisfaction survey for ED staff has been conducted and results are pending.□Conclusions□According to the collected data, the intervention rate was low, which demonstrates a low necessity to implement a forma process of reviewing discharge prescriptions. However, the specific results of this project would be utilized to enhance ED providers prescribing and prevent medication errors in the future.

Learning Objectives:

Report the intervention rate based on discharge prescription reviews completed by ED pharmacists

Identify specific types of interventions completed by ED pharmacists during discharge prescription reviews

Self Assessment Questions:

Based on the results of this project, which of the following is correct regarding pharmacist interventions in the emergency department at Wheaton Franciscan - St. Joseph Campus?

A Majority of the interventions were completed for pediatric patients

B: Most of the interventions involved a cost reduction for patients

C: Antibiotics were the main category of medications requiring interve

D: Analgesics were the main category of medications requiring interv

Based on the results of this project, which of the following statements is correct?

A Most interventions occurred due to drug interactions

B The overall intervention rate was approximately 2.4%

C The number of prescriptions written by medical residents during th

D The ED pharmacist spent a maximum time of six to eight minutes

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-722 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

BUILDING A BETTER MEASURE OF INPATIENT ANTICOAGULATIOI QUALITY

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Patient harm on anticoagulation is an important issue for health systems. The purpose of this study is to build a better measure of inpatient anticoagulation quality. As a pilot, this study will explore the usefulness of several inpatient variables, determining their cumulative indicative power in regards to bleeding on anticoagulation. A scoring system will be developed to identify patients harmed on anticoagulation that may replace current measures of anticoagulation quality in an effort to facilitate process improvement.□Patients on anticoagulation with warfarin, heparin and enoxaparin between 2007 and 2012 will be included in the study. Cases and controls (n=100) will be matched based on two criteria: (1) anticoagulant and (2) length of stay +/- 1 day. An event will be defined as a bleed that occurs during an admission that is documented on discharge summary. Corporate data stores, medication error reports and ICD-9 codes will be used to identify patients. The presence of inpatient surrogate markers indicative of bleeding will be assessed for each group and a univariate analysis will be conducted. Those variables associated with bleeding ($p < 0.2$) will be included in a multivariate regression model. formulated using backwards elimination to determine which variables are indicative. The variables with odds ratio ≥ 1, demonstrating indicative value, will be included in creating a scoring system. The scoring system will be tested in a random sample of anticoagulated patients with unknown bleeding event status. Patients will be screened until similar numbers exist in each score strata +/- 10 patients (n=300). The bleeding rate at each strata will be evaluated, and based on bleeding rate distribution, a cutpoint for positive bleed will be defined. The sensitivity, specificity and positive predictive value of the score will be assessed, and a receptor operating curve (ROC) created.

Learning Objectives:

List inpatient surrogate makers indicative of bleeding

Explain the potential utility of a scoring system in identifying patients harmed on anticoagulation as it relates to health system quality

Self Assessment Questions:

Which of the following inpatient surrogate markers is likely indicative of bleeding?

A Age > 65

B: Administering FFP (fresh frozen plasma)

C: Administering NSAID (non-steroidal anti-inflammatory drug)

D: Inr > 5

All of the following statements are true regarding the potential utility of a scoring system in identifying patients harmed on anticoagulation EXCEPT?

A A scoring system will capture 100% of patients harmed on anticoa

B A scoring system may capture a majority of patients harmed on ar

C A scoring system can be used to benchmark anticoagulation quali

D A scoring system quantifying patients harmed on anticoagulation r

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-723 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF ANTIRETROVIRAL THERAPY IN A LARGE URBAN CLINIC - DOES A DIVERSE PATIENT POPULATION REQUIRE A DIVERSITY OF TREATMENT OPTIONS?

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Purpose There are numerous highly active antiretroviral therapy (HAART) combinations to treat human immunodeficiency virus (HIV). The high cost of preferred regimens, and possible availability of less expensive generics, may significantly impact drug formularies. The purpose of this study is to determine the proportion of patients engaged in care with undetectable viral load (VL) and document the diversity of regimens in order to evaluate the necessity of having a large complement of antiretrovirals for optimal HIV treatment. Methods

Data was obtained through electronic medical record. Patients must be: ≥ 18 years, HIV diagnosis ≥ 30 days, attend clinic as a walk in or scheduled appointment, engaged in care (≥2 clinic appointments in previous 12 months), and have a CD4 and VL within the previous 6 months. For patients receiving treatment, it must be for ≥ 3 months. Summary of Results A total of 600 patients were observed (90.5% male) and 105 different regimens were recorded with 65 unique to a single patient. Atripla was most common (34.5%) regimen followed by Truvada and Norvir boosted Reyataz (10.5%). Patients were on a salvage regimen in 65.2% of the cases. Overall, 82% had undetectable VL and only 5% had a VL over 1001 copies/mL, with this 5% of the study population accounting for 99.2% of the community, or total, VL. The mean CD4 count was 449 cells/uL and a mean VL of 8000 copies/mL. Conclusion Of the patients followed in clinic, over 80% have an undetectable VL. In addition, 10.8% were prescribed a unique regimen no one else is on. The future of antiretroviral formulary management will need to proceed cautiously; fiscal responsibility and availability of all antiretrovirals will need to be further evaluated to ensure optimal HIV treatment.

Learning Objectives:

Discuss the importance of having a full complement of antiretroviral therapy available for patients in order to provide optimal HIV treatment

Identify a Department of Health and Human Services (DHHS) recommended HIV regimen

Self Assessment Questions:

Which of the following is a clinical benefit of having all antiretrovirals available on formulary?

A Patients are able to switch regimens whenever they want

B: Patients may develop resistant mutations and require a salvage re

C: If the pharmacy has a low supply of one antiretroviral, they can sul

D: Most HIV patients are on more than seven antiretroviral medicatio

Which of the following is a DHHS preferred regimen for a treatment nave HIV patient?

A 2 Nucleoside Reverse Transcriptase Inhibitors and 1 Non Nucleos

B 3 Non Nucleoside Reverse Transcriptase Inhibitors and 1 Protease

C 1 Nucleoside Reverse Transcriptase Inhibitor, 1 Non Nucleoside R

D 1 Non Nucleoside Reverse Transcriptase Inhibitor and 1 Integrase

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-635 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THROMBOCYTOPENIA IN CRITICALLY ILL PATIENTS RECEIVING CONTINUOUS RENAL REPLACEMENT THERAPY

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Thrombocytopenia is common in critically ill patients and associated with increased mortality. Several risk factors for developing thrombocytopenia have been established, including acute kidney injury (AKI), intravascular devices, and medications. Continuous renal replacement therapy (CRRT) intersects critical illness and AKI; however, an association with thrombocytopenia is not well-studied. Further confounding a potential association between CRRT and thrombocytopenia is the concomitant use of heparin to prevent filter thrombosis and suspicion of heparin-induced thrombocytopenia (HIT). This is an investigator-initiated, single-center, retrospective study evaluating the impact of CRRT on platelet count and the incidence of thrombocytopenia. Adult patients admitted to the medical, surgical, cardiovascular, and burns intensive care units who received continuous venous-venous hemofiltration (CVVH) or continuous venous-venous hemodialysis (CCHVD) for at least 48 hours will be included. The primary outcome is the magnitude of intra-patient change in systemic platelet count during CRRT. Secondary outcomes include the identification of independent risk factors for thrombocytopenia and the frequency of laboratory assessment for and incidence of HIT while receiving CRRT. A total of up to 150 patients will be included. Data collection and analysis are currently being conducted.

Learning Objectives:

Review the use of continuous renal replacement therapy (CRRT) for acute kidney injury (AKI)

Discuss the potential causes of thrombocytopenia in critically ill patients

Self Assessment Questions:

Which of the following is the CRRT modality that uses a high blood flow rate to filter by convection and requires a replacement fluid?

A Ihd

B: Cvvh

C: Cvvhd

D: Capd

Which of the following tests is the gold standard, confirmatory test for the diagnosis of HIT?

A Anti-Xa

B 4 Ts

C Elisa

D Sra

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-487 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RECOMBINANT FACTOR VIIA UTILIZATION IN PEDIATRIC CRITICAI CARE: MEDICATION USE EVALUATION

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Recombinant factor VIIa (rFVIIa) has limited Food and Drug Administration (FDA)-labeled indications including known factor-deficiency. The objective of this study is to establish patterns of rFVIIa utilization in order to analyze dosing and reason for use. Additionally, in conjunction with critical care, we hope to establish institutional recommendations and guidelines for off-label use.□Prior to commencement, this study was submitted to the Institutional Review Board for approval. A literature search was conducted to determine use of rFVIIa for both FDA approved as well as off-label indications. This retrospective chart review and medication utilization evaluation was conducted at Childrens Hospital of Wisconsin (CHW). The health system's electronic medical record system was used to identify patients who received recombinant factor VII while hospitalized from September 2009 through September 2012. Retrospective data was gathered from patients comprehensive electronic medical records. Data collected includes: patient demographics (age, admission reason and concomitan disease states), dosing per kilogram, cumulative dosing, reason for use and adverse medication events related to rFVIIa use including subsequent bleeding or clots. A guideline for use will be established in collaboration with the division of critical care in order to optimize anti-fibrinolytic therapy.□A total of 191 patients received 887 doses of rFVIIa during this period. Use following approved FDA indications for known factor deficiency accounted for 4.7% of patients (9) but over 72.6% of doses (644). The remaining doses were used in emergent situations and cardiology procedures with excessive bleeding. 182 patients (95.3% of total use) received 243 doses for off-label indications. The average dose for emergent use was 65 mcg/kg while in known deficiency the average dose was 126 mcg/kg.□The majority of patients treated with rFVIIa within our institution are treated for off label indications. There remains wide and inconsistent dosing regarding the utilization of rFVIIa.

Learning Objectives:

Identify indications for recombinant factor VIIa use in pediatric critical care

Discuss the need for dosing guidelines in order to use recombinant factor VIIa in a cost-effective manner.

Self Assessment Questions:

Which of the following is a FDA-approved use of factor VIIa?

A Anticoagulation reversal due to drug overdose

B: Postoperative hemorrhage in cardiovascular surgery

C: Postoperative hemorrhage prophylaxis in Hemophilia

D: Emergent use to slow hemorrhage in an acutely decompensating f

Which of the following is true regarding risk-benefit ratio of factor VIIa administration?

A Factor VIIa is a relatively inexpensive medication with acquisition c

B There is no significant risk of thrombosis with the use of factor VIIa

C Dosing of factor VIIa is well-established in pediatric patients.

D Expert panels concur that the use of rFVIIa in refractory hemorrha

Q1 Answer: C Q2 Answer: D

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Activity Type: Knowledge-based Contact Hours: 0.5

SOCIOECONOMIC FACTORS AND THE ODDS OF RECEIVING GENERIC ANTIEPILEPTIC DRUGS

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Purpose: Controversy surrounds the use of generic antiepileptic drugs (AEDs). Some antiepileptic medications have narrow therapeutic indexes with small changes in concentration potentially causing loss of seizure control or toxicity. Several recent studies have compared brand name antiepileptics to their generic counterparts to determine if there is a difference in seizure control or seizure-related adverse outcomes when patients are changed between formulations. The results of these studies are conflicting; some show an increased risk of seizures and seizure related injury, while other studies show no difference in seizure control. A common weakness of these studies is that they do not take into account potential differences in the populations of the patients receiving brand name or generic AED. A growing number of studies show disparities in health care outcomes between people of different race/ethnicity and socio-economic status (SES). The purpose of this study is to identify patient characteristics associated with the odds of receiving generic formulations of antiepileptics. The hypothesis is factors such as insurance type, race/ethnicity and SES may influence the odds of being prescribed a generic AED. These patient factors could reflect health care disparities and could be potential confounders to future observational studies. □□Methods: For this cross-sectional analysis, a large, commercially insured database will be used to identify patients with a primary diagnosis of epilepsy who are prescribed an antiepileptic. The following patient specific data will be collected: age, gender, state of residence, type of insurance, amount of co-payment of the antiepileptic, education level, race/ethnicity, household income and net worth. Patients will be categorized as receiving brand name or generic antiepileptics. Multivariable logistic regression will be used to identify which, if any, patient characteristics influence the odds of the outcome of receiving brand name or generic prescriptions.□□Results/Conclusions: To be presented at Great Lakes Residency Conference

Learning Objectives:

Identify socioeconomic factors associated with the odds of patients with epilepst receiving generic antiepileptic drugs.

Recognize that the certain socioeconomic factors may be associated with overall health care disparities in patients with epilepsy.

Self Assessment Questions:

According to studies, patients with epilepsy with lower socioeconomic status (SES) are more likely to experience which of the following compared to patients with epilepsy with higher SES?

A Controlled seizures

B: Higher quality of life

C: Drug-related side effects

D: Lower rate of emergency room visits

Currently, what is the ratio of the generic to brand name log-transformed mean values for area under the curve (AUC) and maximum concentration (Cmax) that is required for the FDA to declare bioequival

A 90% – 105%

B 80% – 125%

C 87.5% – 102.5%

D 99% – 100%

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-489 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DELIRIUM IN THE PEDIATRIC INTENSIVE CARE UNIT: PROVIDER PERSPECTIVES REGARDING SCREENING AND TREATMENT

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Delirium has recently come to light as a serious and often over-looked condition common among critically ill adults. A large knowledge deficit concerning delirium in the pediatric population still remains. Delirium has been associated with poor prognosis and increases in length of hospital stay, mortality, and health care costs. During the delirious state, both children and adults commonly experience psychotic symptoms and delusions of a profoundly disturbing nature which can lead to the development of post-traumatic stress disorder. The importance of timely and effective screening is paramount. A full psychiatric evaluation is not practical in the intensive care unit as it is time consuming and requires specially trained personnel. A tool that can be used at the bedside for rapid diagnosis and continued monitoring is of vital importance to the practice of both adult and pediatric intensive care medicine. In this study, we evaluated the Pediatric Confusion Assessment Method (pCAM ICU) and its use in the pediatric intensive care unit (PICU) at our facility.

In order to evaluate the utility and practicality of the screening tool, surveys were conducted to assess provider feedback. The initial survey was performed to establish a baseline identifying the interest level of providers caring for patients in the PICU in regards to the importance of screening and treating pediatric delirium. The next phase was during the trial period using the pCAM-ICU. The focus of this evaluation was to determine if the tool was practical, simple to use, and a reasonable addition to daily care activities. The final evaluation occurred after the pilot period. It assessed providers perceptions regarding the tools usefulness, utilization, and if providers understanding of delirium had changed. If the implementation is successful, pCAM-ICU may be used to identify delirious pediatric patients and assist in facilitating their providers ability to treat via creation of an order set.

Learning Objectives:

Recognize the various presentations of ICU-related delirium.

Explain the impact that ICU-related delirium has on the patient.

Self Assessment Questions:

Which of the following statements regarding ICU-related delirium is correct?

A Delirium does not impact an individual's ability to maintain focus or
B: The most common presentation is the hyperactive form (i.e. comb
C: Delirium is associated with increased length of mechanical ventilat
D: Delirium is a trivial component of critical illness and does not requi

Which of the following statements is correct

A The preferred agents for medical management of ICU-related deli
B Adult patients are at greater risk for developing delirium than pedia
C There are no prolonged adverse effects associated with ICU-deliriu
D Management of ICU-related delirium includes environmental modif

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-490 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF DELIRIUM SCREENING ON DURATION OF RESTRAINTS AND TIME TO EXTUBATION IN A MEDICAL INTENSIVE CARE UNIT

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Purpose: Evidence supports the use of pharmacologic agents for the management of delirium, yet many patients remain untreated after a positive delirium screen. Current literature also highlights the negative impact of restraints on patient outcomes in the Intensive Care Unit (ICU) The objective of this study was to evaluate whether initiating delirium treatment within 24 hours of a positive screen reduces the number of days in restraints and improves patient outcomes compared with delayed or no treatment. Methods: Patients from a mixed ICU with a documented positive delirium score using the Intensive Care Delirium Screening Checklist (ICDSC) were retrospectively examined. Patients were grouped based on having received treatment within 24 hours or having received no treatment or treatment beyond 24 hours following the first positive delirium screen. Accepted treatment agents were predetermined based on available literature and accepted clinical practices. Primary endpoints were number of days spent in restraints and time to extubation after the initial positive delirium screen. Secondary endpoints included hospital and ICU length of stay (LOS) and survival to discharge. Results: Two hundred intubated patients were either pharmacologically treated (n=98) or not (n=102) within 24 hours of the first positive delirium score. Patients receiving treatment spent a shorter median time in restraints compared with patients who were not treated (3 vs. 6 days; $p<0.001$), and had a shorter median time to extubation (3 vs. 6.5 days; $p<0.001$). Patients treated within 24 hours also experienced a shorter ICU LOS (9.5 vs. 16 days; $p<0.001$) and hospital LOS (14.5 vs. 22 days; $p<0.001$) compared with the non-treated group. All-cause mortality was reduced in the group receiving timely treatment (8% vs. 22%, $p=0.008$). Conclusions: Pharmacologic treatment of delirium within 24 hours of the first positive screen resulted in fewer days spent in restraints and shorter time to extubation compared to no or delayed treatment.

Learning Objectives:

Discuss the differences between hypoactive, hyperactive, and mixed delirium and explain how this variable presentation affects the diagnosis of delirium.

List three important side effects of antipsychotic medications.

Self Assessment Questions:

Which of the following is not an accepted treatment for ICU delirium?

A Quetiapine
B: Dexmedetomidine
C: Ziprasidone
D: Lorazepam

Which of the following adverse drug effects is not characteristically attributed to antipsychotics?

A Lupus-like syndrome
B QT prolongation/torsades de pointe
C Extrapyramidal side effects
D Lowering of the seizure threshold

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-491 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OF VARIOUS ANTIRETROVIRAL REGIMENS FOR THE TREATMENT OF HIV IN PREGNANT WOMEN: A RETROSPECTIVE REVIEW

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Purpose: The Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV Transmission in the United States list lamivudine & zidovudine in combination with either nevirapine, atazanavir boosted with ritonavir, or lopinavir boosted with ritonavir as preferred options. Other treatment regimens may be effective, however data is lacking to support their safety and efficacy for HIV treatment in pregnancy. The objective of this study is to compare the safety and efficacy of antiretroviral regimens used in pregnant HIV infected women through retrospective analysis of morbidities experienced by these women and their infants.□□Methods: Data collection will begin after approval from the Institutional Review Board. Both the electronic medica record and the Immunodeficiency Clinic's paper records will be used to identify HIV positive women who received antiretroviral therapy during pregnancy. Each episode of pregnancy in these patients will be individually, retrospectively reviewed. Charts will be reviewed using a rubric to identify HIV treatment regimen(s), rates of miscarriage and preterm labor, side effects of the medication in the mother, parameters of viral suppression, and effects on other laboratory values. In addition, the corresponding infant's charts will be reviewed for HIV status and growth parameters at birth and one month. All data will be collected without patient identifiers and maintained confidentially. Statistics will then be used to compare the regimens based on these outcomes.□□Results/Conclusion: The research is in the data collection phase. Final results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the currently recommended treatments regimens for prevention of vertical HIV-1 transmission

Discuss a retrospective review evaluating the safety & efficacy of various anti-retroviral regimens for the treatment of HIV-1 in pregnant women: a retrospective review

Self Assessment Questions:

Which of the following is a preferred agent for the treatment of HIV-1 during pregnancy?

A Tenofovir
B: Emtricitabine
C: Abacavir
D: Zidovudine

Which of the following was used in the study "Safety & efficacy of various anti-retroviral regimens for the treatment of HIV-1 in pregnant women: a retrospective review" to compare the efficacy of var

A Maternal need for antibiotics
B Infant HIV status
C Maternal liver function tests
D Infant z-scores

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-636 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF POINT-OF-CARE INR TESTING FOR INPATIENTS WITH CHRONIC KIDNEY DISEASE

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Purpose:□Patients on chronic hemodialysis require lifelong venous access, therefore fistula placement and function is imperative in these patients. The ability to maintain functional fistulas is dependent on the preservation of patients veins. Frequent venipuncture and catheter insertion can damage blood vessels and limit future venous access. Vascular damage includes phlebitis, venous sclerosis, stenosis, and thrombosis. □□Point-of-care (POC) coagulation meters have been shown to be a safe and reliable means of assessing international normalized ratio (INR) values. The purpose of this project was to implement a pharmacist managed POC INR testing service for inpatients with chronic kidney disease (CKD) to prevent unnecessary venipuncture and preserve blood vessels for future fistula placement.□□Methods:□A pharmacist service was developed to conduct the POC INR testing. Nephrologists identified inpatients with chronic kidney disease on concomitant warfarin therapy and were allowed to order the POC INR testing at their own discretion. Pharmacists then conducted the POC testing, documentation, and charging daily. This pharmacist service was initiated at a single hospital within a healthsystem to determine the efficacy of the process. The service was evaluated by assessing provider satisfaction, patient volume, inappropriate venipuncture, incomplete documentation, and any failure to complete INR testing. This evaluation is a process improvement project, and therefore it is exempt from review by the Institutional Review Board (IRB). □□Results/Conclusion:□Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of limiting venipuncture in patients with CKD.

Outline the process for initiating POC INR testing for inpatients.

Self Assessment Questions:

What are potential benefits of POC INR testing for CKD patients?

A Limit venipuncture
B: Preserve future venous access
C: Increase compliance with INR monitoring
D: All of the above

Which statement regarding POC coagulometers is true?

A Results can not be uploaded directly to the electronic medical recc
B Non-waived devices are suitable for home use
C No quality control is necessary
D Certain devices allow barcode scanning

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-492 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RXCARES: A RETROSPECTIVE COHORT STUDY OF A STRUCTURED PHARMACIST HOSPITAL TRANSITION OF CARE SERVICE

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Medication errors occur across various transitions of care despite efforts to improve medication reconciliation. These errors are associated with increased adverse health outcomes and costs and are among the leading cause of hospital readmission. Thus, there is a need to develop models and strategies to reduce medication errors and improve patient care. RxCARES is a pharmacy-led transitional care model supported by the University of Illinois at Chicago College of Pharmacy. It was designed as a highly structured and reproducible intervention to facilitate continuity and resolve common problems faced during transitions of care. Ultimately, the goals of RxCARES are to prevent medication errors and reduce unnecessary hospitalizations and costs. This study is a retrospective cohort study with a parallel control to evaluate the effectiveness of RxCARES in decreasing medication discrepancies, improving continuity of care, and reducing readmission rates and emergency department visits. □□Data was collected from the time of admission to 30 days after discharge during September 2011 to May 2012. Patients were included if they met one of the following criteria: > 10 scheduled medications; > 65 years of age and > 5 scheduled medications; > 65 years of age and second admission in 1 year; or direc referral. Patients were excluded if they were a prisoner, unable to complete the RxCARES follow-up phone call, or not discharged from a medicine team. The primary objective is to determine whether RxCARES can effectively reduce the number of medication discrepancies at hospital discharge. The primary outcome measure is the number of medication list discrepancies per patient at discharge. Secondary outcomes include hospitalization readmission rates and emergency department visits 30 days after discharge, compliance with outpatient clinic appointments within 30 days after discharge, continuity of the medication list, and descriptions of interventions and discrepancies. □□Data is currently being collected and evaluated.

Learning Objectives:

Define the interventions involved with RxCARES

Recognize the positive outcomes from RxCARES

Self Assessment Questions:

Which of the following statements is correct with regards to RxCARES?

A Medication reconciliation is reviewed by the pharmacist at admissi
B: The follow-up phone call is completed one week after discharge fr
C: Brand name medications are recommended to generate profit
D: The updated medication list reflects the patient's medications upor

RxCARES was designed as a quality improvement initiative to

A Reduce hospital readmission rates and ED visits within 3 months a
B Improve continuity of care between transitions from hospital to hor
C Reduce medication discrepancies and errors
D Both b and c

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-724 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ALVIMOPAN IN PATIENTS RECEIVING EPIDURAL OPIOIDS FOLLOWING BOWEL RESECTION

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Purpose: Alvimopan is a peripherally acting mu-opioid receptor antagonist shown to accelerate time to gastrointestinal (GI) recovery in patients receiving parenteral opioids following bowel resection. We propose a study to investigate GI recovery in patients receiving epidural opioids and alvimopan following bowel resection versus epidural opioids and no alvimopan.□□Methods: This single-center retrospective chart review will evaluate adult patients who received a bowel resection and epidural opioids between July 2009 and December 2012. We will randomize included patients into two cohorts: those receiving epidural opioids and alvimopan and those receiving epidural opioids and no alvimopan. Data collection will include the following: patient demographics, hospital admission date, date of surgery and surgical procedure, alvimopan and opioid dose information, date of return of bowel function, presence of postoperative ileus and discharge date. □□

The primary endpoint of this study is the incidence of postoperative ileus, identified by ICD 9 codes, in patients receiving epidural opioids and alvimopan compared to a matched cohort of patients receiving epidural opioids and no alvimopan. Secondary endpoints will evaluate time to return of bowel function and length of hospital stay in the matched patients. □□Results: To be presented□□Conclusions: To be presented

Learning Objectives:

Explain the etiology of postoperative ileus.

Describe the mechanism of action of alvimopan.

Self Assessment Questions:

Which of the following contribute to the etiology of postoperative ileus?

A Surgical stress and inflammatory mediators
B: Changes in electrolyte and fluid balance
C: Endogenous and exogenous opioids
D: All of the above

Which of the following describes the mechanism of action of alvimopan?

A Centrally acting mu-1 receptor antagonist
B Peripherally acting mu-2 receptor antagonist
C Centrally acting mu-1 receptor agonist
D Peripherally acting mu-2 receptor agonist

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-726 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE STUDY OF 2007 INFECTIOUS DISEASE SOCIETY OF AMERICA / AMERICAN THORACIC SOCIETY (IDSA/ATS) MINOR CRITERIA AND INTENSIVE CARE UNIT ADMISSION PROCESS

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PURPOSE: The 2007 IDSA/ATS minor criteria consist of nine observations that can be used to identify severe community acquired pneumonia (CAP) at time of presentation. By meeting three or more of these minor criteria, it is recommended that the patient be directly admitted to the Intensive Care Unit (ICU). The objective of this study is to determine if there is an association between mortality outcomes and utilization of the IDSA/ATS minor criteria in detecting severe CAP guiding ICU admission within the first 24 hours following presentation.

METHODS: All patients admitted with pneumonia will be identified using the hospitals electronic medical record system and charts will be reviewed retrospectively. Patients will be excluded if they meet the criteria for healthcare-associated pneumonia, are immunosuppressed, o meet either IDSA/ATS major criteria (mechanical ventilation or septic shock requiring vasopressor support). The following nine minor criteria will be assessed and data will be collected from the first 24 hours of hospital admission: respiratory rate, PaO2/FiO2 ratio, multilobar infiltrates, confusion/disorientation, blood urea nitrogen level, white blood cell count, platelet count, temperature and hypotension requiring aggressive fluid resuscitation. Patients will be stratified into the following four groups: met three or more minor criteria and admitted to the ICU, met three or more minor criteria and not admitted to the ICU, did not meet three or more minor criteria and admitted to the ICU, or did not meet three or more minor criteria and not admitted to the ICU. The primary outcome will be 30 day all-cause mortality. Length of hospital stay will be evaluated as a secondary outcome. PRELIMINARY RESULTS: Data collection is currently ongoing. Data analysis will begin following the completion of collection. CONCLUSIONS: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Recognize the impact of hospitalization for community acquired pneumonia on mortality and length of hospital stay.

Recall the IDSA/ATS nine minor criteria recommended for guiding direct ICU admission in community acquired pneumonia.

Self Assessment Questions:

Which of the following is not one of the nine IDSA/ATS minor criteria:

A BUN ≥ 20 mg/dL

B: Respiratory rate ≥ 30 breaths/min

C: Heart rate < 60

D: WBC < 4000 cells/mm3

Which pathogen is not commonly associated with community acquired pneumonia?

A Steptococcus pneumoniae

B Klebsiella pneumoniae

C Haemophilus influenza

D Acinetobacter spp

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-725 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF VITAMIN D LEVEL UTILIZATION AND SUPPLEMENTATION IN CHRONIC KIDNEY DISEASE PATIENTS AT THE CINCINNATI VETERAN AFFAIRS MEDICAL CENTER: A RETROSPECTIVE CHART REVIEW ANALYSIS

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Purpose About 14% to 42% of apparently healthy individiuals over the age of 60 in the United States had plasma levels of 25(OH)D below 24-25 ng/mL. Vitamin D was found to have actions in a variety of tissues including the renal, cardiovascular, and immune systems. These actions seem to be critical in patients with different comorbidities such as diabetes, chronic kidney disease, cardiovascular diseases and cancer. The project aims to evaluate the utilization, supplementation, and follow up of 25-hydroxyvitamin D (25(OH)D) levels in patients with chronic kidney disease (CKD) at the Cincinnati Veterans Affairs Medical Center (VAMC). Methods Retrospective chart review study of patients with chronic kidney disease that also suffer from vitamin D insufficiency or deficiency. Patient data will be collected from January 1, 2007 until December 31, 2011. Data will be collected using the VAMC VISN 10 Data Warehouse to obtain data of all patients with a GFR of <60 mL/mir from the dates stated above. There will be two consecutive GFRs collected at least 3 months apart initially. Chart review will be used to support the diagnosis from the GFR based on K/DOQI guidelines. If needed, data will be randomized after patient data has been de-indentified. Block randomization will be used. These patients will be reviewed through VAMC computerized patient record system (CPRS) fo baseline characteristics and will also be documenting appropriate monitoring labs, such as repeat PTH, and 25(OH)D level. Data collected will be analyzed to measure the number of patients with CKD that had a PTH and a 25(OH)D drawn. Baseline demographic data such as age, sex, race, and body mass index will be obtained. CKD data such as GFR, calcium, phosphorus, serum creatinine, parathyroid hormone, and number of co-morbid conditions (specifically hypertension, diabetes, and cardiovascular disease) will also be collected.

Results/Conculsion Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the importance of Vitamin D replacement in patient with chronic kidney disease stages 3 to 5

Identify pertinent laboratory parameters in assessing vitamin D levels and recognize when to treat vitamin D insufficiency and deficiency.

Self Assessment Questions:

Which of the following best decribes the definition of vitamin D deficiency according to the K/DOQI guidelines?

A 25(OH)D levels are less than 5 ng/mL

B: 25(OH)D levels are 16-30 ng/mL

C: 25(OH)D levels are 5 – 15 ng/mL

D: 25(OH)D levels are more than 30 ng/mL

In recent studies, it has been shown that adequate replacement of vitamin D levels have demonstrated a reduction in:

A Quality of life

B Morbidity and mortality

C Disease progression

D Incidence of comorbid conditions such as diabetes and cardiovasc

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-493 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

AUTOMATED VENOUS THROMBOEMBOLISM RISK ASSESSMENT AND ITS EFFECT ON PATIENT PROPHYLAXIS

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Chronic obstructive pulmonary disease (COPD) is a known risk factor fo the development of venous thromboembolism (VTE) in hospitalized patients. These patients must be identified and given proper prophylaxis to prevent the formation of clots, which can cause an increase in morbidity and mortality. The objective of this study was to determine the impact of the implementation of an automated VTE risk assessment too on anticoagulant selection in COPD patients, as well as its effect on safety outcomes and readmission rates.□□The study protocol was approved by the institutional review board. This retrospective review assessed the impact of the October 2011 implementation of a computerized VTE risk assessment tool at the Detroit Medical Center (DMC). Included patients were between the ages of 18-89 and had been admitted between December 2010 and August 2012 for a COPD exacerbation defined by a documented International Classification of Diseases, Ninth Revision (ICD-9) code of 496.0 (COPD) and shortness of breath indicated in the history of present illness or first inpatient progress note following admission.□□Information including basic patient demographics (e.g. age, gender, height, and weight), serum creatinine, comorbidities, anticoagulation contraindications, and VTE risk factors were collected from the Electronic Medical Record (EMR) of 3 DMC hospitals. □□The primary objective was to determine the number of eligible patients based on Caprini risk score receiving VTE prophylaxis, and whether the prescribed prophylaxis matched hospital protocol. Secondary objectives included determining the number and percentage of ordered patient prophylaxis doses not administered, number of thromboses, major and minor bleeding events, and 30-day readmission rates. Patient VTE risk scores were hand calculated to assess the accuracy of the automated system. □□Results will be presented at the 2013 Great Lakes Pharmacy Residency Conference.□□Conclusions wil be presented at the 2013 Great Lakes Pharmacy Residency Conference

Learning Objectives:

Describe chronic obstructive pulmonary disease exacerbations and their relation to venous thromboembolisms.

Discuss the benefits of the use of an automated thromboembolism risk assessment tool.

Self Assessment Questions:

Which of the following is a potential complication of a chronic obstructive pulmonary disease (COPD) patient who develops a venous thromboembolism (VTE):

A Increased risk of infection

B: Increased risk of pulmonary embolism

C: Increased risk of intensive care unit admission

D: B and C are correct

According to the Caprini thrombosis risk assessment tool, which of the following qualify for full venous thromboembolism prophylaxis with heparin?

A A 35 year old male admitted for a COPD exacerbation (score = 1)

B A 45 year old female admitted with a history of breast cancer (scor

C A 55 year old male admitted with a history of heparin induced thro

D A 65 year old female admitted for epistaxis, with a history of pulmc

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-494 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DESIGN AND EVALUATION OF A RISK ASSESSMENT TOOL TO DECREASE MEDICATION-RELATED READMISSIONS

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Background: Despite recent initiatives at Froedtert Hospital, including pharmacist-driven medication reconciliation and discharge counseling, our readmission rate of 13.3% is still above the goal of less than 11.5% (University HealthSystem Consortium median). Several pharmacist activities may reduce readmissions including Medication Therapy Management (MTM), which when offered to patients recently discharged from the hospital may improve care transitions and decrease hospital readmission rates.□□Purpose: The purpose of this project is to develop a tool to identify patients during their hospital stay who are at high risk for a future medication-related readmission. National and Froedtert Hospital specific data were examined to determine factors such as patient demographics, medical conditions, number of medications, and recurrent hospitalizations that place patients at high risk for medication-related readmissions. These identified factors were combined to create a medication-related readmission assessment tool (MRRAT), which classifies all patients as high, medium, or low risk for a medication-related readmission. The tool will be evaluated, modified if needed based on capture rate, and implemented within internal medicine units a Froedtert Hospital. Patients identified as high risk will be referred to a MTM clinic appointment with a pharmacist. □□Methods: The MRRAT was evaluated through a retrospective chart review of 157 adult patients admitted to an internal medicine unit at Froedtert Hospital between April 1st and June 30th, 2012. □The primary outcome of this retrospective analysis is to determine the number of high risk patients identified by the MRRAT during the review period. The secondary outcome is the numbe of readmissions within 30 days of hospital discharge for patients identified as high, medium, and low risk by the MRRAT.
□□

Results/Conclusion: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize criteria used in the MRRAT

Describe how the MRRAT was used to identify high risk patients

Self Assessment Questions:

Which of the following is one of the risk criteria used in the MRRAT?

A History of coronary artery disease (CAD)

B: History of dementia

C: Age ≥ 60 years old

D: ≥ 2 changes to the patient's prior to admission medication list at di

Which of the following people will use the MRRAT to identify high risk patients for a medication-related readmission?

A Inpatient attending provider

B Primary care provider

C Inpatient pharmacist

D Community pharmacist

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-727 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) SURVEILLANCE CULTURE AS A PREDICTOR FOR MRSA-VENTILATOR ASSOCIATED PNEUMONIA AND PROLONGED ANTI-MRSA TREATMENT

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Objective: The Society of Healthcare Epidemiology of America recommends all acute care hospitals implement an MRSA monitoring program and that colonized patients be in contact isolation. The majority of patients admitted to hospitals are tested for MRSA colonization via the MRSA-polymerase chain reaction (PCR) test. Several studies have demonstrated a strong association between MRSA colonization and subsequent MRSA infections. It is unknown if these results effect physicians prescribing tendencies of anti-MRSA therapies. The goal of this study is to determine if a correlation exists between the MRSA-PCR tests and the likelihood of developing MRSA-ventilator associated pneumonia (VAP). If the positive predictive value (PPV) and negative predictive value (NPV) of the MRSA nasal screening tests were found to be a strong predictor for the likelihood of MRSA-VAP, this screen could potentially be used to guide empiric antibiotic therapy. Methods: This is a retrospective, multi-center chart review at two academic medical centers in Indianapolis, Indiana. A list was requested with all patients from May - December 2012 that met inclusion criteria. Patients were included if they had a bronchoalveolar lavage (BAL), mini-BAL or tracheal aspirate, a MRSA-PCR test conducted, and mechanically ventilated ≥48 hours prior to cultures. Patients were excluded if they were less than 18 years of age, were pregnant or were prisoners. The specificity, sensitivity, PPV and NPV will be calculated in relation to the MRSA-PCR test (negative or positive) and the likelihood for development of MRSA-VAP. We will also examine the duration of anti-MRSA therapy for patients without MRSA growing in their respiratory culture and determine what factors correlated to therapy beyond 72 hours with a negative respiratory culture. Results/Conclusions: Data collection is currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the specificity, sensitivity, positive predictive value and negative predictive value when correlating the MRSA-PCR colonization test with the likelihood of developing MRSA-VAP.

Identify what factors may lead to prolonged therapy with anti-MRSA antibiotic therapy for patients without a MRSA-VAP.

Self Assessment Questions:

What percent of patients with MRSA colonization will subsequently develop an infection due to MRSA?

A 6%
B: 17%
C: 29%
D: 38%

Based upon the American Thoracic Society and the Infectious Disease Society of America guidelines for the management of adults with HAP, VAP and HCAP, what is the maximum amount of time that empiric a

A 24 hours
B 36 hours
C 48 hours
D 72 hours

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-495 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF STATE-REQUIRED CONTROLLED PRESCRIPTION DATABASE ON PRESCRIBING PRACTICES IN A COMMUNITY HOSPITAL EMERGENCY DEPARTMENT

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Purpose: On July 20, 2012, new requirements went into effect regarding Kentuckys electronic prescription monitoring program (KASPER). KASPER is intended to reduce prescription drug diversion and abuse. The new regulation (House Bill 1) has stricter and more specific guidelines for use by physicians prior to prescribing certain controlled substances. There is little current data on the efficacy of prescription monitoring programs. The purpose of this research project is to see if the type and volume of prescriptions written in the emergency department are affected by the changes in required KASPER use. Methods: This study is a retrospective, medical chart review of patients seen in the emergency department at Ephraim McDowell Regional Medical Center in Danville, Kentucky. A report will be generated of all the patients seen in the emergency department from April 1, 2012 through June 30, 2012 and October 1, 2012 through December 31, 2012. The patient profiles will be sorted by chief complaint upon arrival to the emergency department. Complaints containing "pain" will be included in the research pool. From the research pool, random profiles will be examined. Data collected will include patient birthdate, gender, reported medication allergies, chief complaint/diagnosis, prescribed medications upon discharge, name of physician who wrote discharge medications, and the results of KASPER queries if applicable. The primary outcome is to determine if changes to KASPER have impacted the prescribing practices in the emergency department. Secondary outcomes include determining how often prescribers are querying KASPER, identifying any trends in KASPER results and prescriptions given upon discharge, and examining the relationship between verbal pain scores and discharge prescriptions. The institutional review board approved this study. Summary of (preliminary) results: Data analysis is currently being conducted. The final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Explain the current legislative and regulatory changes in Kentucky regarding controlled substance prescribing and dispensing reporting.

Describe the impact the legislative and regulatory changes have had on prescribing trends in the emergency department of a community hospita in rural Kentucky.

Self Assessment Questions:

Which of the following statements is correct?

A Emergency department practitioners must query KASPER before
B: Pharmacists must query KASPER before dispensing controlled su
C: Emergency department practitioners must query KASPER before
D: Pharmacists must query KASPER before dispensing controlled an

The results from this study showed:

A decreased number of prescriptions written for controlled substance
B decreased number of prescriptions written for non-controlled and c
C increased number of prescriptions written for controlled substance
D no changes in the number of controlled or non-controlled prescript

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-641 -L03-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PRECURSOR ADVERSE DRUG EVENTS AND THEIR RELATIONSHIP TO ADVERSE DRUG EVENTS RESULTING IN PATIENT HARM

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Purpose: The objective of this study is to evaluate precursor adverse drug events (ADEs) that originate in the dispensing phase of the medication use process and to assess the potential relationship to serious events that result in patient harm. Health-systems typically devote more time and resources toward investigation of serious ADEs while completing less thorough reviews of precursor ADEs. Further attention to precursor and near miss events may provide valuable insigh into error prevention strategies to avoid serious patient harm.Methods: A retrospective review of voluntary medication event reports (severity 1-9) submitted at a large free standing childrens hospital for a 12 month period will be completed. Descriptive statistical analysis will be performed on all events that originated within the dispensing phase of the medication use process (ie. medication order verification, dispensing, delivery, etc). Pharmacy process-specific events were evaluated based on the following categories: severity scale, origin of error, origin of error description, and origin of error detail. The relationship between precursor events and serious adverse drug events will be examined. Preliminary Results: To be presentedConclusions: To be presented

Learning Objectives:

Identify the three most common categories of medication errors that originate in an inpatient pediatric hospital pharmacy.

Describe two reasons why it is important to monitor precursor and near miss events in order to improve patient safety.

Self Assessment Questions:

More severe ADEs typically originate outside of the pharmacy department for which of the following reasons?

A Pharmacists and technicians are always vigilant and do not make
B: The majority of ADEs within hospitals are unrelated to medication
C: Errors made in the pharmacy department are frequently detected b
D: Dispensing errors never result in severe ADEs.

Why should precursor and near miss events that originate in the hospita pharmacy be evaluated?

A Precursor and near miss events result in the highest severity ADE
B To discipline those employees involved in causing errors.
C There is no value in evaluating precursor and near miss events.
D Precursor and near misses occur more frequently and analysis ca

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-831 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND USE OF A MULTI-FACTORIAL SCORE TO ASSESS ADHERENCE TO ANTIRETROVIRAL MEDICATIONS IN A PEDIATRIC POPULATION

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Background: Adherence to combination antiretroviral therapy (cART) is essential for successful viral suppression in HIV infected individuals. A direct correlation exists between virologic failure and the number of missed doses of cART. Although its importance is well documented in the literature, adherence is difficult to objectively evaluate due to reliance on the memory and honesty of the patient or caregiver. The relationship between HIV RNA viral load, CD4 cell count, and individual adherence measures has been reported, but the consensus among the pediatric HIV community is that the combination of multiple measures is likely to provide the most reliable predictability with regard to adherence.

Purpose: To identify a possible correlation between a multi-factorial adherence score and objective markers of disease progression, such as HIV RNA viral load, in a pediatric HIV population.Methods: A cross-sectional survey was conducted in our pediatric HIV outpatient clinic. All English-speaking HIV infected patients less than 18 years of age on cART were eligible for study inclusion. Patients were excluded if, within 3 months of study inclusion, cART was initiated or one or more medications in the cART regimen were changed. Demographic data and HIV specific lab values were collected from the patients medical record. A verbal questionnaire was administered to determine cART knowledge, including medication identification, dosing intervals, and proper administration. The questionnaire also included information regarding patient and caregiver perceived barriers to medication adherence. Responses to the questionnaire were used to calculate a multi-factorial adherence score. Descriptive statistics were used to analyze demographic data, and logistic regression analyses were used to evaluate the association between the multi-factorial adherence score and HIV RNA viral load. Results/Conclusion: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the importance of adherence to cART for adequate suppression of HIV viral load.

Identify cART adherence measures reported in the pediatric literature.

Self Assessment Questions:

What is considered the cART adherence threshold associated with optimal viral suppression?

A 90%
B: 95%
C: 98%
D: 100%

Which of the following cART adherence measures is not well reported in the pediatric primary literature?

A Patient self-reporting
B Electronic monitoring devices
C Medication refill records
D Drug serum concentrations

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-637 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPING A PROCESS FOR IDENTIFYING AND CREATING PHARMACY-RELATED REPORTS

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Purpose: The department of pharmacy at Aurora Health Care requires reports for clinical, financial, and operational decisions. A new electronic health record (EHR) is being implemented system-wide and pharmacists did not receive appropriate training to effectively utilize the reporting tools available in the new system. A defined process for identifying, requesting, and creating reports was also lacking. The primary purpose of this project is to educate pharmacy staff on how to utilize the reporting tools within the EHR and to develop a process to request a new report if one does not currently exist. Methods: In order to determine the data architecture within the new EHR, online and one-on-one training was completed. Then an assessment of the currently available pharmacy reports in the EHR was done. Next, a survey was distributed to caregivers assessing their baseline knowledge, ease of use of the new reporting tools, and reports that pharmacy staff would like to have available. A search of vendor created reports was completed based on the results of the survey and necessary reports were made available. A comprehensive, searchable database of all reports available in the EHR was compiled and distributed. Finally, a reporting request workflow was developed so that users could ask for new reports to be developed in a timely manner. A training manual and an online computer based training program were created to teach pharmacy users how to run, edit, save, create, and request new reports. After completion of the online training course, users were re-surveyed to assess objective and subjective measures of the program. Subjective measures included caregiver satisfaction and effectiveness of the training program. Objective measures include the number of reports available before and after the new report request workflow was implemented.

Results/Conclusions: Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the type of reports required by the pharmacy department based on clinical, operational, and financial needs.

Discuss the benefits of creating a self-paced course to teach pharmacists how to use create reports in the electronic health record

Self Assessment Questions:

Which of the following is a clinical report that can be obtained from the electronic health record?

A High-alert medication use in the past 24 hours

B: Override alert report on opioid drips

C: Total number of doses of infliximab given in 30 days

D: Number of orders requiring pharmacist administration time adjustn

Which of the following options best describes the value of an online computer based training (CBT) program on reporting in the pharmacy department?

A It allows for the ability to ask questions as they arise

B CBT programs help pharmacists complete their daily monitoring a

C CBT allows users to learn at their own pace

D Users do not need training on reporting and can learn on their own

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-728 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTS OF ANTIDEPRESSANT SELECTION FOR DISCHARGED MILITARY MEMBERS WITH REGARDS TO CONTINUATION OF ANTI DEPRESSANT USED ON ACTIVE DUTY

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In the last decade the United States Armed Forces has developed new policies that increased antidepressant medication use. This shift in policy has increased the amount of veterans transitioned into the Veteran Health Administration (VHA) taking an antidepressant. Antidepressants have been shown to be effective in maintaining remission of depression and treating a number of other disorders including anxiety and post-traumatic stress disorder (PTSD). Studies have not sufficiently identified outcomes associated with changing antidepressant medications during or after a patient's response. The objective of this study is to identify if patients discharged from active duty on antidepressant therapy will require less adjustment of antidepressant therapy if they remain on the same medication at initiation of care by the VHA compared to those started on an alternate medication therapy. Secondary objectives include evaluation of the effect of continuity of treatment on time to first adjustment in medication therapy and the number of psychiatric hospitalizations or suicides. A retrospective cohort study comparing two groups of veterans was conducted. Those receiving the initial antidepressant prescribed while on active duty and those initially prescribed a different antidepressant at initiation of care within the VHA. The primary endpoint is the number of patients requiring adjustment of antidepressant therapy initiated at VHA within the study groups. Secondary endpoints include rates of hospitalizations for mental health disorders (excluding voluntary admission into a PTSD or substance abuse residential programs) suicides, and time to augmentation of antidepressant therapy. The primary endpoint will be analyzed using a Chi-Squared test of association, with calculation of confidence intervals and odds ratios based on the Mantel-Haenszel test. Secondary endpoints will be assessed using the paired t-test and cox-proportional hazard models and Kaplan-Meier Curve as appropriate. Results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Describe the different approaches described by STAR*D for adjusting antidepressant therapy for patients who fail therapy.

Identify the risk factors that impact postdischarge suicide and depression.

Self Assessment Questions:

The STAR*D trial found what approach most effective for patients who failed intial antidepressant therapy?

A Switching antidepressant therapy to a different medication.

B: Augmenting initial therapy with a second medication that has a diff

C: Switching and augmentation of therapy had similar results.

D: Discontinuation of inital therapy and intiation of a mood stabalizer.

What risk factors for depression and suicide may impact recently discharged veterans

A change in occupation/ job loss

B re-establishment of civilian social roles

C physical injuries or illness

D all of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-496 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE DEVELOPMENT AND EVALUATION OF A VERIFICATION-DRIVEN PHARMACY PRODUCTIVITY MODEL

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Background:□The accurate measurement of inpatient pharmacy productivity has been a long-standing point of debate and confusion. Commonly utilized productivity metrics include doses dispensed, patient days, and admissions. Adjustments to these metrics have been developed to account for limitations including inpatient/outpatient revenue adjustment, Centers for Medicare and Medicaid Services (CMS Case-Mix Index (CMI), and Pharmacy Intensity Score (PIS). These adjustments improve productivity projections but do not account for variability in technology and the institutions pharmacy practice model. Optimally a productivity model would take differences in practice models and patient mix and severity into account, while still allowing for comparison between similar institutions. This study aims to develop a productivity model that uses weighted verifications by pharmaceutical class to more accurately represent demand placed on the pharmacy department. The model will be validated by comparison to two other pharmacy productivity models: Adjusted Admissions-CMI, and Adjusted Admissions-PIS. □Methods:□The departments medication use process and practice model were evaluated to determine areas where resources are utilized. Following the department analysis, pharmacist verification o medication orders was selected as the driver for the model. By utilizing verifications, pharmacists cognitive work associated with the order was captured while still incorporating product-based activities associated with the pharmacist and pharmacy technician. □Medications were classified by pharmaceutical class and weights were assigned to each class based on: time needed to verify a new medication order; verification of a medication discontinuation; time associated with answering nursing and physician questions; product preparation and checking; technician delivery time; and time spent resolving any additional issues with medication orders. Time values associated with these functions were captured from the electronic medical record (Epic), observations of staff, and staff feedback. □Results:□Data analysis is in process with results pending.

Learning Objectives:

Review the limitations of historical pharmacy productivity metrics.

Describe a weighted-verifications pharmacy productivity model and it's benefits and limitations.

Self Assessment Questions:

Which of the following is a traditional pharmacy productivity metric?

A Doses dispensed
B: Admissions
C: Revenue
D: Verifications

Which of the following is a benefit of utilizing a weighted-verifications pharmacy productivity model?

A The model is directly translatable to other hospitals
B The model accounts for difference in practice model, technology, e
C The model accounts for all activities of a department
D The model requires very little maintenance and upkeep

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-729 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DESIGN, IMPLEMENT, AND EVALUATE AN EDUCATIONAL PROGRAM TO INCREASE PHARMACISTS AWARENESS TO OPTIMIZE PAIN MANAGEMENT

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Purpose: □The Joint Commission (TJC) standards and federal Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey scores involve components that focus on pain management. Inpatient clinical pharmacists are in a position to contribute to optimal pain regimens. Patients achieve improved outcomes, higher satisfaction, and decreased□healthcare costs when pharmacists are proactively involved through interventions and education. The first objective of this project is to increase pharmacists awareness of pain management through the development of an educational program. The second objective is to improve regulatory compliance by educating clinical pharmacists about identifying appropriate indications for multiple pain medications. □□Methods:□A case-based pain management education program will be designed and implemented as an online training module to improve pharmacists pain management skills. Topics including chronic, acute, neuropathic, and cancer pain will be reviewed as well as dose adjustments or conversions, and concepts of abuse, tolerance, and addiction. In addition, non-opioid medications, management of side effects, and how to wean off pain medications will be covered. Time-limited competency exams will assess proficiency before and after training module implementation. Assessment of effective training will be completed through Kirkpatricks Four-Level Model of Evaluation. Pain management algorithms will be developed to aid front line providers in the choosing of specific pain medications. References for pain management will be developed for pharmacists and nurses. Lastly, due to the required changes in regulations, an audit of the number of pain medications with indications will be analyzed. □□Results and Conclusion: □Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize barriers to proactive clinical monitoring by pharmacists

Explain the strategy of an educational program to improve effectiveness and resources in pain management for pharmacists

Self Assessment Questions:

What is a major barrier preventing pharmacists from taking proactive approaches to pain management?

A Conversion calculations are difficult to perform between different p
B: Pain assessment documentation is limited or not accessible to pha
C: Inability to assess renal or hepatic function of patients on certain p
D: Lack of pain management education and unsubstantiated fears an

Which of the following is a likely result of an educational pain management program for pharmacists?

A Increased confidence in pain management and patient outcomes
B Enhanced pain scale score documentation and compliance
C Increased numbers of patients with multiple pain medications
D Enhanced qualifications and certifications in pain management

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-497 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF TREATMENT OUTCOMES OF CEFAZOLIN VERSUS OXACILLIN FOR MSSA BLOODSTREAM INFECTIONS - A MULTI-CENTERED OBSERVATIONAL STUDY

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Purpose: Recent literature supports the preferential use of antistaphylococcal penicillins (i.e. oxacillin) or first generation cephalosporins (i.e. cefazolin) for the treatment of beta-lactamase producing methicillin-susceptible Staphylococcus aureus (MSSA) bloodstream infections. Due to case reports of cefazolin treatment failure in MSSA endocarditis, antistaphylococcal penicillins are often used in clinical practice for MSSA infections. There is a lack of data regarding the comparative efficacy and safety of antistaphylococcal penicillins and first generation cephalosporins. The objective of this study is to assess clinical outcomes of patients with MSSA bloodstream infections that are treated with cefazolin or oxacillin. Methods: This is a retrospective, multi-center observational study of patients with MSSA bloodstream infections treated with cefazolin or oxacillin at Rush University Medical Center (RUMC) and Northwestern Memorial Hospital (NMH). Patients with a positive blood culture for MSSA, hospitalized from 01/2010-06/2012, >18 years-of-age, and treated with at least one dose of study drug within 48 hours of finalized culture results were considered for analysis. Exclusion criteria included: patients with polymicrobial infections, receipt of non-study drugs for the definitive treatment of MSSA, receipt of ≥5 days of non-study drug, <18 years-of-age, and documented penicillin or cephalosporin allergy. Pertinent patient variables will be collected and evaluated including: site of infection, baseline demographics, treatment regimen, time to first negative blood culture, adverse drug events, and cost of therapy. The primary endpoint will be differences in in-hospital mortality. Secondary endpoints include time to death, duration of bacteremia, adverse events, clinical cure versus treatment failure, outcomes of high burden diseases (i.e. endocarditis and endovascular infections), and cost of therapy. This study has been approved by the Midwestern University, RUMC, and NMH institutional review boards. Results/Conclusion: Data collection is currently in progress. Results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review current treatment options for methicillin-susceptible Staphylococcus aureus (MSSA) blood stream infections.

Discuss the key differences between the antistaphylococcal penicillins and the first generation cephalosporins.

Self Assessment Questions:

According to recent literature, which of the following options is the preferred treatment for MSSA bloodstream infections?

A Vancomycin
B: Linezolid
C: Ceftaroline
D: Cefazolin

Which of the following is a unique adverse event more-frequently associated with oxacillin than cefazolin use?

A Rash
B Hepatotoxicity
C Neurotoxicity
D Diarrhea

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-498 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF PHARMACIST-MANAGED ANTIMICROBIAL STEWARDSHIP IN AN INTENSIVE CARE UNIT IN A COMMUNITY HOSPITAL

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Purpose The purpose of this project is to improve antimicrobial utilization based on evidence based medicine at Vista Medical Center East (VMCE). Nomograms for the most commonly encountered disease states have been developed to serve as a tool for the clinical pharmacist conducting daily antimicrobial therapy reviews in the Intensive Care Unit (ICU). Methods A retrospective chart review was conducted including patients receiving antimicrobial therapy in the Intensive Care Unit from January 1, 2012 through March 31, 2012. Exclusion criteria: patients not admitted between the specified dates, patients not receiving antimicrobial therapy during the hospital stay, and patients only receiving surgical prophylaxis following surgery. Charts were reviewed on 100 patients meeting inclusion criteria with the following information collected: patient number, age, gender, medication allergies, admitting diagnosis, living arrangement, physicians consulted, antimicrobial therapy agents, duration of therapy, culture results, radiology reports, dates of hospitalization, dates of ICU stay, and whether pharmacy maintained or extended the seven-day stop date on antimicrobial therapy. The retrospective data revealed that antimicrobial therapy was inappropriately used on 51% of patients. The most common indications receiving inappropriate therapy were empiric therapy, Clostridium difficile, and urinary tract infections. Inappropriate antimicrobial therapy occurred most often when neither infectious diseases nor pulmonology was consulted. Daily reviews of antimicrobial therapy on patients in the ICU are conducted by pharmacy. Antimicrobial therapy continues to be followed when a patient is transferred out of the ICU until all antimicrobial therapy is discontinued or the patient is discharged. Recommendations are written as an antimicrobial stewardship note in the progress notes or made verbally to the physician if present.

Results/Conclusion: Will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review evidence based therapy for commonly encountered disease states in the intensive care unit at Vista Medical Center East

Recognize areas for pharmacist interventions in antimicrobial therapy regimens

Self Assessment Questions:

What percentage of antimicrobial prescribing has been found to be inappropriate, whether with respect to indication, route, dose, known allergies, or susceptibility data?

A 30%
B: 40%
C: 50%
D: 60%

Which of the following is an opportunity for pharmacist recommendation

A De-escalating therapy based on culture results
B Changing therapy due to resistant organisms
C Discontinuing therapy following completion of treatment course
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-499 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTICOAGULATION WITH RIVAROXABAN IN POST CARDIOVERSION PATIENTS (ARC STUDY)

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Purpose□Rivaroxaban is a novel, orally active, selective Factor Xa inhibitor that has been proven to be non-inferior to warfarin for the prevention of stroke in nonvalvular atrial fibrillation in the ROCKET-AF trial; however, the use of rivaroxaban for the prevention of stroke in the immediate post-cardioversion period has not been studied. Patients undergoing cardioversion have an embolic risk of 1-5% and therefore require sufficient peri-caridoversion anticoagulation to minimize this adverse event. Given the convenience of dosing, lack of drug-food interactions, and lack of required coagulation monitoring, it appears prudent to utilize rivaroxaban for anticoagulation in this patient population. This may decrease the economic burdens and morbidity associated with the repeated follow-up monitoring required with warfarin. The purpose of our trial is to prove that a larger clinical trial utilizing rivaroxaban for this indication is feasible. □□Methods□This is a prospective, unblinded, interventional, proof of concept study in which up to 60 patients will be enrolled between December 2012 and June 2013. Patients will be provided with rivaroxaban 20mg tablets to be taken daily with an evening meal for a total duration of 30 days. Inclusion criteria include: 1) non-valvular afib with successful cardioversion. Exclusion criteria include: 1) Extended anticoagulation requirement due to co-morbidities, 2)significant renal or hepatic dysfunction (CrCl <15mL/min, Childs-Pugh Class B or C), 3) History of coagulopathy, 4) active bleeding within previous 30 days, 5) concomitant use of anticoagulants or potent CYP3A4/P-gp inducers or inhibitors, 6) pregnancy, 7) age <18 years, and 8) interventions requiring interruption of therapy. All patients are followed up with a phone call every week to assess the incidence of both major and minor bleeding.□□Results/Conclusions□Data will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize Rivaroxaban is a novel, orally active, selective Factor Xa inhibitor that has been proven to be non-inferior to warfarin for the prevention of stroke in nonvalvular atrial fibrillation in the ROCKET-AF trial.

List the major adverse effects associated with rivaroxaban.

Self Assessment Questions:

When compared to warfarin, the use of rivaroxaban provides several advantages including:

A No anticoagulant efficacy monitoring
B: Superior efficacy in preventing thromboembolic events post cardio
C: One time anticoagulant efficacy monitoring
D: Weekly dosing

Which of the following is an adverse effect of rivaroxaban?

A Hyper-reflexia of the lower extremities
B Toxic epidermal necrolysis
C Hyperuricemia
D Spinal hematoma formation with traumatic lumbar punctureHyperu

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-501 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TWO YEARS EXPERIENCE WITH AN ESTABLISHED COMPUTERIZED PHYSICIAN ORDER ENTRY SYSTEM WITH CLINICAL DECISION SUPPORT SYSTEMS

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Purpose:□Clinical decision support systems such as medication-related alerts and order sets are being implemented in many electronic health records. Medication-related alerts such as drug-drug interactions, drug-allergy interactions, dose, and duplicate therapy alerts are displayed to the ordering user at the time of order entry. Order sets are standardized lists of orders used to guide treatment for a particular disease state which are generally based on evidence-based guidelines. The use of order sets has been shown to improve compliance with recommended care processes and improve patient outcomes. Thirty-seven percent of medication orders originate from an order set at NorthShore University HealthSystem.□□Many organizations such as the Centers for Medicare and Medicaid Services and The Joint Commission have developed standards requiring pharmacist review prior to the dispensing of medications. The objective of this project is to describe the medication-related decision support in an established computerized physician order entry system with clinical decision support. □□Methods:□A report will be generated of all medication orders originating from standardized order sets from January 1, 2011 through December 31, 2012. From these results, specific order sets from designated specialties will be further analyzed for pharmacist intervention. The medication-related alerts displayed to ordering and verifying users, and the types of pharmacist intervention will be determined. Medications will be classified by parameters such as originating order set and pharmaceutical class.□□Results/Conclusion:□Collection and analysis of the data is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the type and quantity of pharmacist interventions in medication orders originating from standardized order sets

Recognize the role of medication-related alerts in an established computerized physician order entry system

Self Assessment Questions:

Which of the following describes a list of orders based on current medical literature and evidence used to guide treatment for a particular diagnosis?

A A medication-related alert
B: A standardized order set
C: A preferred medication set
D: A therapeutic guideline

Which of the following organizations require pharmacist review before the dispensing of medication?

A Centers for Disease Control and Prevention
B Federal Bureau of Investigation
C Centers for Medicare and Medicaid Services
D National Institutes of Health

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-730 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TRANSITIONS OF CARE: IMPACT OF PHARMACIST EDUCATION OI HEART FAILURE PATIENTS

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Purpose:□Treatment of heart failure (HF) patients contributes significantly to annual health care expenditures, largely due to hospitalizations and emergency center (EC) visits. Hospitalizations or EC visits may be due to patient noncompliance with HF medications. Pharmacists can play a role in decreasing hospitalizations and EC visits by counseling patients on their medications at discharge. In one study, the use of a medication calendar listing HF medications and directions for use resulted in lower rates of patient reported medication errors.The purpose of this study is to determine whether pharmacists education combined with the use of a medication calendar will improve patients understanding of their medications and medication adherence, and therefore decrease hospitalizations and EC visits.□ □Methods:□HF patients discharged December 2012- January 2013 will be randomized to the control or intervention group. Patients will be included if they are at least 18 years old, have HF as a primary or secondary diagnosis, and are discharged home. We will exclude patients transferred to another health care facility, with terminal illness, with cognitive impairment or mental disability, and those unwilling to participate.□Patients in the intervention group will be provided a medication calendar and counseled by the pharmacist on their HF medications while inpatient. Following discharge, patients in the intervention group will receive a phone call from the pharmacist at 7, 30 and 90 days post-discharge to discuss medication adherence and any HF medication related concerns. Patients in the control group will receive a phone survey to assess their medication adherence at 30 days and 90 days post-discharge. To assess patients adherence to HF medications the Morisky score will be compared. Secondary outcomes will be assessed by comparing readmission rates and EC visits.□ □Results/Conclusion:□This study is under investigation with results and conclusions to be presented at Grea Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe patient factors that lead to re-admission for HF exacerbations.

Discuss the pharmacists role in discharge education in HF patients.

Self Assessment Questions:

Which of the following patient factors do not lead to re-admission for HF

A Noncompliance with diet

B: Use of opioids

C: Use of NSAIDS

D: Noncompliance with medications

Which of the following CMS performance measures can pharmacists play a role in?

A Ensuring a beta-blocker is prescribed at discharge

B Ensuring an ACE/ARB is prescribed at discharge

C Counseling on smoking cessions

D A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-500 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST EDUCATION ON VITAMIN K UTILIZATION IN A TEACHING HOSPITAL FOR THE REVERSAL OF VITAMIN K ANTAGONIST

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Background:□The Cabell Hospital Huntington Inc. (CHHI) warfarin monitoring service has noticed overzealous use of vitamin K to reverse warfarin-induced anticoagulation in light of current Chest-91 recommendations. Excess vitamin K potentially leads to warfarin resistance when warfarin therapy is restarted.2,3 An audit of 50 doses of vitamin K for warfarin reversal, between 7/1/2012 and 8/30/2012, found that 6 mg 3 mg of vitamin K were used to reverse warfarin. This cohort-controlled study will measure the impact of Chest-9 based Instrument on vitamin K utilization for reversal of warfarin at CHHI. □□

Method:□Prospective cohort-controlled study of patients requiring vitamin K to reverse warfarin induced anticoagulation associated with a critically elevated INR value, bleeding, or non-elective invasive procedures. Electronic medical records (EMRs) will be screened for patients requiring vitamin K to reverse warfarin induced anticoagulation associated with: 1) INR > 3.5; 2) bleeding; or 3) non-elective invasive procedures. Data will be collected for six months before and after implementation of Instrument. Inclusion criteria: 1) patients ≥ 18 years of age treated with vitamin K for warfarin reversal within; and 2) pre and post INR values measured within 24 hours of the dose of vitamin K. Exclusion criteria: 1) patients < 18 years old; 2) vitamin K therapy for a reason other than warfarin reversal of warfarin induced coagulation. Data collected will include: 1) demographics (age, weight, gender, admission diagnosis, indication for warfarin); 2) therapies (vitamin K indication, total amount of vitamin K received, units of FFP used in conjunction with vitamin K, bridge therapy for subtherapeutic INR); and 3) outcomes (length of stay, INR values).□□Results/Conclusion: □Data collection and evaluation is currently in progress.

Learning Objectives:

Explain the pharmacology of warfarin and vitamin K

Discuss the effects excessive dose of vitamin K on INR

Self Assessment Questions:

The risk of excessive use of vitamin K may result in _____ upon re-initiation warfarin therapy.

A Subtherapeutic INR

B: No change in INR

C: Warfarin resistance

D: A and C

At 24 hours after an oral dose of 5 mg vitamin K, the effect on INR is similar to a dose of_____.

A VitaminK 1 mg IV

B VitaminK 2 mg IV

C VitaminK 3 mg IV

D VitaminK 4 mg IV

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-502 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

GLOBAL HEALTH TRAINING IN POST-GRADUATE PHARMACY RESIDENCY: NEEDS, OPPORTUNITIES, AND EFFECTS

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Purpose: Healthy People 2020 has defined global health as an area that plays a critical role in affecting the health of the U.S. population. As an integral component of the healthcare workforce, the pharmacy profession strives to not only meet, but also anticipate, the current healtl needs and to improve societal health. One fundamental way of achievin this is through strengthening the educational, practice and service opportunities by cultivating global-minded pharmacy professionals, able to recognize health disparities and social determinants of health. A better understanding of global health in the context of pharmacy and the impact of global health experiences on pharmacists during residency may help identify training needs and opportunities. The purpose of this research project is to conduct a landscape analysis of the current opportunities in global health available to pharmacy residents in the United States through characterization of global health training and availability within pharmacy residencies and assessment of the perceived value and effects of a global health experience. Methods: ASHP-accredited post-graduate year 1 and 2 pharmacy residency programs (PGY-1 and -2) were identified through the American Society of Health System Pharmacists (ASHP) database, and non-accredited PGY-1 and PGY-2 pharmacy residencies were identified through a systematic web search. An electronic survey questionnaire was emailed to all program directors of the 1484 identified residency programs. Program directors also received a request to forward a separate electronic survey to current residents and alumni of their program. Results/Conclusion: Data collection has been completed and analysis is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the various dimensions of the global health definition

Discuss the impact of global health training in pharmacy residency

Self Assessment Questions:

Which of the following statements is correct regarding global health?

A Embraces a few disciplines but has not emphasized multidisciplina
B: Synthesizes population-based prevention with individual-level clini
C: Addresses mainly infectious diseases, particularly HIV/AIDS, tube
D: Focuses on health issues of countries other than one's own, espec

According to the survey responses of current residents and alumni, which of the following is an effect of global health experience on professional development?

A Limiting perspective of drug procurement and distribution processe
B Limiting understanding of disease states management in resource
C Increased appreciation for cross-cultural communication with patie
D Increased disdain for serving indigent and medically underserved c

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-731 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF THE QUALITY OF HOSPITAL ADMISSION MEDICATION HISTORIES COMPLETED BY A PHARMACIST IN THE EMERGENCY DEPARTMENT

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Purpose: The occurrence of medication discrepancies at the time of hospital admission ranges from 30% to 70%. The Joint Commission endorsed medication reconciliation as a National Patient Safety Goal in 2005 in an effort to minimize adverse events. Up to 27% of all prescribing errors that occur in the hospital result from incomplete medication histories at the time of admission. Studies have found that a patients medication history is more accurate and complete when obtained by a pharmacist compared to other healthcare providers. The current process for obtaining medication histories in the emergency department (ED) is the ED nurse updates the medication list upon the patients arrival to the ED. Then, the admitting physician places admission medication orders from the updated medication list. The objective of this project is to compare the accuracy of the medication histories between those collected by the ED nurses and the ED pharmacist in a population admitted as inpatients at a community health system hospital. Methods: In this six-week pilot project, patients admitted through the ED will have their medication histories obtained by either an ED nurse or ED pharmacist. An independent pharmacist will review each patients electronic health record within 48 hours after admission for completeness and accuracy. The independent pharmacist will record the number of discrepancies (ie. drug name, dose, route, or frequency) on a medication history form. The independent pharmacist will identify and reconcile all discrepancies. Results: Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the purpose for obtaining medication histories upon admission to the ED.

Review the process of obtaining medication histories upon inpatient admission from the emergency department.

Self Assessment Questions:

Which of the following health care provider is responsible for obtaining medication histories?

A Caregiver
B: Respiratory therapist
C: Medical assistant
D: Pharmacist

When should health care providers obtain medication histories?

A Upon inpatient admission
B Upon arrival to outpatient pharmacy
C During the ambulance trip to the hospital
D During air transport to the hospital

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-833 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF DRUGS/DRUG CLASSES IMPLICATED IN EMERGENCY DEPARTMENT VISITS IN THE ELDERLY AT JESSE BROWN VA MEDICAL CENTER

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Purpose: Medication-related problems place a big burden on todays healthcare system. Elderly patients are particularly vulnerable to these drug-related problems that often lead to potentially avoidable hospitalizations. Previous trials have shown that a majority of adverse drug events (ADEs) leading to hospitalizations were related to medications that are appropriate in elderly patients and cannot be completely avoided (i.e., warfarin, insulins, oral hypoglycemic agents, and oral antiplatelet agents). Although these medications provide significant benefits, the high rates of ADEs should not be considered acceptable. Patient safety efforts should involve improving monitoring fo these medications to ensure optimal care for high-risk populations. The primary objective of this study is to determine the number of ADEs leading to emergency department (ED) visits in elderly patients due to warfarin, insulins, oral hypoglycemic agents, and oral antiplatelet agents at Jesse Brown VA Medical Center (JBVAMC). Methods: This study is a retrospective chart review of patients 65 years and older who had ar ED visit at JBVAMC from January 1, 2012 through June 30, 2012 and ar active prescription for one or more of the following drugs between October 1, 2011 and June 30, 2012: warfarin, insulins, oral hypoglycemic agents (glipizide, glyburide, and glimepiride), and oral antiplatelet agents (aspirin, aspirin-dipyridamole, cilostazol, clopidogrel, prasugrel, ticagrelor, and ticlopidine). Patients were included if there was a progress note within 24 hours of the ED visit documenting outpatient medications. Visits related to illicit drug abuse, drug withdrawal, or intentional overdoses were excluded. The primary endpoint is the number of ED visits related to the 4 high-risk drugs or drug classes. The secondary endpoints include classifying these ADEs by type and manifestation, and identifying patient, prescriber, drug, and system factors associated with these ADEs. Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

List the reasons why elderly patients are more vulnerable to adverse drug events.

Identify high-risk medications and medication classes that may lead to potentially avoidable emergency department visits and hospitalizations i the elderly.

Self Assessment Questions:

Which of the following make elderly patients more vulnerable to adverse drug events?

A Pharmacodynamic and pharmacokinetic changes that accompany
B: Polypharmacy
C: Nonadherence to medical appointments
D: Both A and B

According to the study conducted in 2011 by Budnitz et al. on national surveillance data of adverse events, which 4 drugs or drug classes were implicated most often in hospitalizations caused by adver

A Warfarin, insulins, oral hypoglycemic agents, oral antiplatelet ager
B Warfarin, digoxin, insulins, oral antiplatelet agents
C Insulins, antiarrhythmics, oral antiplatelet agents, oral hypoglycem
D Opioids, warfarin, insulins, oral antiplatelet agents

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-832 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZING THE EFFECTIVENESS OF INTRAVENOUS MAGNESIUM SULFATE IN ACUTE ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISORDER (COPD) EXACERBATION

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Introduction: Acute asthma exacerbations are responsible for over 1.8 million emergency department (ED) visits, 504,000 hospitalizations, and 4,210 deaths each year. Current national guidelines recommend inhaled short acting -agonists and systemic corticosteroids as the mainstay of therapy. However, in life threatening adult exacerbations or those exacerbation that remain severe (peak expiratory flow <40%) after 1 hour of conventional therapy intravenous magnesium is recommended. It is believed that by replenishing magnesium stores and harnessing magnesiums physiological effect during an acute pulmonary exacerbation adult patients may have improvements in their pulmonary function. This study attempts to clarify the effect of intravenous magnesium in acute adult asthmatic and COPD exacerbations on outcomes such as admission, intubation, length of stay, and mortality. Design: The study is a single center, retrospective chart review. Patients are selected from an electronic medical center report that identifies ED patients with an eligible ICD-9 code for asthma or COPD exacerbation. Data is retrospectively collected on eligible patients from the day of presentation to the ED until discharge. The following metrics are collected for each patient: age, sex, race, pulmonary diagnosis, adherence with asthma medications, serum magnesium levels, medications received in the ED, hospital admission, intubation, duration of intubation, intensive care unit (ICU) admission length of stay in the ICU, length of hospital stay, and mortality status at discharge. Statistical analysis will be applied to the collected data in order to determine whether the administration of intravenous magnesium sulfate had any effect on the above endpoints. Results: Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Describe the postulated mechanisms in which intravenous magnesium may enhance pulmonary function

Recognize the possible benefits and risks of intravenous magnesium administration during an asthma or COPD exacerbation

Self Assessment Questions:

Which of the following statements is/are true? Administration of intravenous magnesium sulfate during an airway exacerbation is thought to:

A Inhibit calcium influx into smooth muscle cells resulting in bronchia
B: Act on neutrophils to decrease inflammation
C: Enhance the bronchial smooth muscles' response to short acting b
D: A and B

The administration of intravenous magnesium for respiratory distress:

A Is rare (<10%) among North American emergency departments
B Is recommended as monotherapy for the treatment of pulmonary e
C Results in a predictable dose-response relationship
D May be associated with flushing, hypotension, and vasodilatation

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-503 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF THE USE OF PROCALCITONIN ON ANTIBIOTIC TREATMENT IN HOSPITALIZED PATIENTS WITH PNEUMONIA

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Purpose□The growing emergence of antimicrobial resistance is a strong indication for the use of biomarkers as tools when determining the presence or resolution of infection. Procalcitonin (PCT) is a peptide precursor of the hormone calcitonin that has been shown to be a useful biomarker for the presence of bacterial infections. PCT concentrations increase within 3-6 hours of onset of infection and have been shown to correlate with severity of infection. The use of PCT as a tool in determining length of treatment has been shown to decrease the use of antibiotics without worsening clinical outcomes. The objective of this study is to determine the effect of PCT-guided discontinuation of antibiotics on duration of therapy in patients admitted to our community hospital with a diagnosis of pneumonia. □□Methods□This retrospective-prospective study compares data for patients admitted with pneumonia before and after implementation of automatic PCT assays on the community-acquired pneumonia (CAP) treatment pathway. PCT assays will be automatically ordered on day 1, 2, and 4 of hospitalization for patients initiated on the pathway. An educational program for providers on the usefulness of PCT and an Antimicrobial Stewardship Team (AST) audit and feedback program will be utilized upon implementation. The AST audit and feedback program will encompass PCT levels being reviewed by AST, and recommendations on interpretation of the value being made to the ordering clinician where appropriate. The primary endpoint is duration of antibiotic treatment before and after implementation of PCT assays on patients on the CAP pathway and AST review. The secondary endpoints are duration of hospital stay and cost of antibiotics. □□Results/Conclusion□Data collection is currently underway. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the clinical conditions that cause elevation in procalcitonin serum concentrations.

Describe the utility of procalcitonin as a tool for patient-specific clinical decision making in the use of antibiotics.

Self Assessment Questions:

Which of the following conditions may lead to elevation of procalcitonin?

A Immunosuppression
B: Lower Respiratory Tract Infection
C: New HIV Infection
D: Acute Coronary Syndrome

In which of the following clinical scenarios would procalcitonin-guided discontinuation of antibiotics be appropriate?

A A patient with no clinical signs and symptoms of infection for 4 day
B A patient with positive sputum cultures who has been febrile during
C A patient with acute pancreatitis and presumed concurrent healthc
D A patient in the intensive care unit with neutropenic fever with a pr

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-504 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HOSPITAL READMISSIONS OF POSTOPERATIVE ATRIAL FIBRILLATION IN THE GENERAL (NON CARDIOTHORACIC) SURGERY POPULATION

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Purpose:□The purpose of this project is to evaluate rate of readmissions of patients who developed atrial fibrillation post non cardiothoracic surgery (POAF).□□Methods:□This is a retrospective cohort study of non cardiothoracic surgery patients. Patients were included if greater than 65 years of age and underwent either a vascular, orthopedic, or abdominal procedure. Patients were excluded if they had a previous history of atrial fibrillation or do not follow up with the Henry Ford Hospital system. Using a list of procedural and ICD-9 codes, subjects were grouped according to the development of POAF, defined as new onset of atrial fibrillation post surgery. The primary outcome is the frequency of all cause readmissions between patients with and without POAF within 30 days post discharge. Secondary outcomes include the frequency of readmissions between rate and rhythm control in patients with POAF and all cause readmission rates 60 and 90 days post discharge.

Learning Objectives:

List risk factors associated with onset of post operative atrial fibrillation.

Identify appropriate treatment strategies for post operative atrial fibrillation.

Self Assessment Questions:

Which of the following is a significant risk factor for the development of post-operative atrial fibrillation?

A Asthma
B: Advanced age (> 65)
C: Cad
D: Copd

Why is rate control therapy considered first line over rhythm control?

A Rhythm control is associated with increased adverse drug effects
B Rhythm control is associated with greater hospitalizations
C Rhythm control is associated with increased thromboembolic even
D All the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-505 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VENOUS THROMBOEMBOLISM RISK IDENTIFICATION IN PEDIATRIC INPATIENTS

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Purpose: The development of venous thromboembolism (VTE) in pediatric patients has been rising over the past couple of decades. The reported annual rates of VTE have increased from 34 to 58 cases per 10,000 hospital visits from 2001 to 2007. Previous studies have looked to identify risk factors for the development of VTEs in pediatric patients, but have often included extensive outpatient influences. This study aims to evaluate additional risk factors for the development of VTE in the inpatient setting. The primary objectives are to identify inpatient risk factors for the development of VTEs and compare different treatment strategies used in pediatric patients with VTEs.□□Methods: A retrospective, case-control study of patients admitted to Peyton Manning Childrens Hospital (PMCH) between January 1, 2011 and December 31, 2011 was conducted. Patients included in the study were less than 18 years old, had an International Classification of Diseases, 9th edition code for VTE at discharge and imaging studies to confirm a diagnosis of VTE. Data on pre-identified risk factors and treatments used for VTE was collected through a retrospective chart review of patient medical records.□□Results/Conclusion: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the increase in the incidence of venous thromboembolisms in pediatric patients.

Recall inpatient risk factors for the development of a venous thromboembolism.

Self Assessment Questions:

What was the increase in annual incidence of venous thromboembolism from 2001 to 2007?

A 2-fold
B: 4-fold
C: 6-fold
D: No change

Which of the following is a primary inpatient risk factor for the development a venous thromboembolism?

A Age
B Presence of a central venous line
C Gender
D Oral contraceptives

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-506 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A STANDARDIZED PROCESS FOR THE CREATION AND MAINTENANCE OF ASSOCIATED MEDICATION RECORDS IN THE ELECTRONIC HEALTH RECORD

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Purpose:□Associated medication records (AMRs) are groups of medication records utilized throughout the electronic health record (EHR). AMRs are created for a common purpose and are used for reporting and clinical decision support. Because of the employment of AMRs across many different areas, it is necessary to systematically maintain them to ensure accuracy and integrity over time. Deficiencies in the process of grouping AMRs have been identified. Therefore, a process to update and maintain them is necessary. The objective of this project is to develop a standardized creation and maintenance process for AMRs at NorthShore University HealthSystem.□□Methods:□A taskforce was established to analyze accuracy of current AMRs within the electronic data warehouse, and develop a standardized process to identify inaccuracies and update the AMRs. This process will be applied to other areas where AMRs exist within the EHR. The number of existing AMRs with at least one error or omission will be evaluated against the total number of AMRs reviewed (percentage of inaccurate AMRs). This process will be used to update and maintain the accuracy of all existing AMRs and allow for standardization of new AMR creation. □□

Result/Conclusion:□Analysis of the maintenance process is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the various ways that AMRs are used within the electronic health record

Identify two categories of information that can be used for AMRs

Self Assessment Questions:

Which of the following is an example of how an AMR can be used?

A Identify where medications are in the hospital
B: To create a list that displays what patients are on heart failure med
C: To prevent the medication from being ordered
D: To carefully assess drug-drug interaction alerts

Which of the following is a category of information that can be used in place of an AMR?

A Physician ordering the medication
B Patient weight
C Formulary status
D Pharmaceutical class

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-732 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF INTRANASAL FENTANYL UPON TIME TO ADMINISTRATION OF ANALGESIA FOR LONG BONE FRACTURES AND THE CREATION OF INTRANASAL MEDICATION ADMINISTRATION GUIDELINES

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Purpose: In 2011, the National Quality Forum published initiatives for reducing time to administration (TTA) of parenteral analgesia for patients presenting to the emergency department (ED) with long bone fractures (LBFs), and such guidance may herald future standards for healthcare institutions. Given that the intranasal (IN) route should not be overlooked as an effective means of parenteral administration, the goals of this project are to standardize IN administration of medications at the University of Wisconsin Hospital & Clinics (UWHC) and to improve TTA of analgesia for patients who present to the ED with LBFs.Methods:

An evidence-based clinical practice guideline consisting of drug-specific administration, pharmacokinetics, dosing, and adverse effect considerations for IN administration will be developed and presented to staff. Assessment of staff knowledge and competency pertaining to IN medications will be completed with an online survey pre- and post-guideline implementation. IN fentanyl TTA will be assessed through a focused two-year retrospective chart review consisting of all patients presenting to the UWHC ED with an ICD-9 Principal Diagnosis Code for LBF and who were administered analgesic medications. The primary measure will be TTA of analgesic therapy, in minutes. The two groups for statistical comparison involve patients administered IN fentanyl and patients administered analgesics via all other routes. Secondary measures include: TTA for oral analgesic therapy; TTA for intravenous analgesic therapy; IN fentanyl dose in micrograms and micrograms per kilogram; and IN fentanyl administration volume per nostril, in milliliters. Pre- and post-guideline implementation TTA data will be compared.Results:Survey results of competency and knowledge pre- and post-guideline implementation. The fentanyl retrospective char review results will include: mean/median dose, mean/median administration volume, and mean/median TTA of analgesia for IN fentanyl and non-IN analgesics.Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe previous evidence comparing time-to-administration of analgesia between intranasal fentanyl and intravenous morphine when used for acute pain in emergency settings

Recall key principles for intranasal administration of medications

Self Assessment Questions:

With regards to pediatric patients presenting to emergency departments which of the following best describes the previous demonstrated impact of intranasal fentanyl upon time-to-administration for ac

A Intranasal fentanyl demonstrated no statistically significant impact
B: Intranasal fentanyl reduced time-to-administration by approximatel
C: Intranasal fentanyl reduced time-to-administration by approximatel
D: Intranasal fentanyl increased time-to-administration by approximat

Under routine circumstances, what is the maximum volume of drug which may be administered in each nostril?

A 0.3 milliliters
B 0.4 milliliters
C 0.67 milliliters
D 1 milliliter

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-733 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

GLYCEMIC CONTROL IN POLYCYSTIC OVARY SYNDROME (PCOS) AT JESSE BROWN VA MEDICAL CENTER

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Background/Purpose:Polycystic ovary syndrome (PCOS) is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovaries. PCOS most commonly presents with menstrual disorders and infertility. Women that do get pregnant are at an increased risk for pregnancy complications including gestational diabetes and hypertensive disorders. Additionally, skin disorders such as hirsutism, acne, and alopecia are common. There has also been some recognition of mood disorders and depression in women with PCOS. PCOS places women at increased risk for insulin resistance and its associated conditions. The insulin resistance can also lead to type 2 diabetes. Greater than 50% of women with PCOS will have diabetes or pre-diabetes before the age of 40. Insulin sensitizers are recommended for PCOS in order to control diabetes and the increased androgen production of the ovaries that is caused by hyperinsulinemia. Insulin sensitizers include the biguanide, metformin, and the thiazolidinediones, pioglitazone and rosiglitazone. The purpose of this study is to evaluate glycemic control in women with polycystic ovary syndrome while also investigating method of diagnosis, diabetic screening, proper medication and disease follow-up, low density lipoprotein over time, change in glycemic control over time, hard diabetic outcomes, fertility outcomes, and development of mood disorders/depression throughout the disease progression. To date, no study has evaluated glycemic control in these patients while incorporating these additional factors.Methods:This is a retrospective, electronic chart review of female veterans with an International Statistical Classification of Diseases and Related Health Problems (ICD-9) code for polycystic ovary syndrome and/or type 2 diabetes. Patients were followed for a minimum of six months, but up to 83 months between 10/01/2005 to 08/31/2012.Results and Conclusions:Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference taking place from April 24-26, 2013.

Learning Objectives:

Describe the pathophysiology of polycystic ovary syndrome (PCOS) and clarify how it places patients at risk for insulin resistance and its associated conditions.

Explain appropriate treatment and follow-up for patients with PCOS in order to prevent progression of the disease.

Self Assessment Questions:

Which of the following is/are disorders associated with polycystic ovary syndrome (PCOS)?

A Infertility
B: Osteoporosis
C: Type 2 diabetes
D: A and C

Which of the following would be an appropriate first line agent for a patient with PCOS and a Hemoglobin A1c of 7.6%?

A Insulin aspart
B Metformin
C Exenatide
D Sitagliptin

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-507 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF CONIVAPTAN AND TOLVAPTAN THERAPY FOR TREATMENT OF HYPONATREMIA MEDICATION USE EVALUATION (MUE)

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Purpose: The arginine vasopressin antagonists (AVP) conivaptan and tolvaptan were added to The Ohio State University Wexner Medical Centers (OSUWMC) Formulary for use in hypervolemic or euvolemic hyponatremic patients who have failed other therapies. Initiation is restricted to serum sodium levels ≤125mEq/L with fluid restriction. The purpose of this MUE is to evaluate adherence to the OSUWMC Pharmacy and Therapeutics (P&T) formulary restriction and patient outcome of a rise in sodium level <12mEq/L in 24 hours. □□Methods: A retrospective medical record review of patients admitted to OSUWMC and received at least 1 dose of conivaptan or tolvaptan between February 2012 and October 2012 was conducted. Patients were identified through OSUWMCs Integrated Healthcare Information System.□□Results: Twenty-seven patients were identified however several were re-hospitalized therefore evaluations were based on 36 patient hospitalizations (22 females; average age: 6020 years). Twenty-five patients were treated with tolvaptan, 3 with conivaptan, and 8 with both conivaptan and tolvaptan. The primary indication for use was cirrhosis-induced hypervolemia(50%). All cirrhotic patients newly started on tolvaptan had sodium levels <125mEq/L and 66% of cirrhotic patients started on conivaptan had sodium levels <125mEq/L. The average rise in sodium levels during a 24 hours period for conivaptan and tolvaptan were 6.16mEq/L(2-12mEq/L) and 3.75mEq/L(2-11mEq/L), respectively. Only 1 patient experienced a sodium level increase of ≥12mEq/L in 24 hours. No adverse effects were documented. There was a 37% mortality rate within the sample; no link could be made between mortality and use of either agent.□□Conclusion: Conivaptan and tolvaptan was prescribed in accordance with the OSUWMC P&T formulary guidelines 66% and 100% of the time for conivaptan and tolvaptan respectively. These agents appear to be appropriate for patients who have failed other therapies for treatment of hypervolemic or euvolemic hyponatremia though no morbidity or mortality benefit was assessed in this evaluation.

Learning Objectives:

Review the appropriateness of use of conivaptan and tolvaptan based o The Ohio State University Wexner Medical Center's P&T formulary restrictions.

Discuss the medication use process improvements identified from this evaluation.

Self Assessment Questions:

Serum sodium correction at a rate of _____ leads to _____.

A >10; liver failure
B: >10; nerve demyelination
C: >12; liver failure
D: >12; nerve demyelination

How many days of therapy are recommended for conivaptan?

A Up to 4 days
B Up to 7 days
C Up to 14 days
D As many days as needed to achieve normal sodium levels

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-508 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF AN INNOVATIVE PHARMACIST-PHYSICIAN COLLABORATIVE INFLUENZA MANAGEMENT PROGRAM

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Objective: To compare the clinical outcomes and healthcare utilization o patients presenting to a community pharmacy with influenza-like illnesses using three models of care.□□Methods: Patients age 18 and older who visited a local grocery store chain pharmacy were recruited based on reported symptoms of influenza-like illness beginning February 1, 2013 to May 30, 2013. Once it was determined that the patient met the inclusion criteria, an initial assessment was conducted by a technician or pharmacist and the patient received care via one of three treatment models: (1) standard care through usual pharmacy proceedings, where patient symptoms were managed with over-the counter products, education or physician referral; (2) administration of a rapid diagnostic test by a pharmacist or technician using the Sofia Influenza A+B Fluorescence Immunoassay System, followed by pharmacist communication with the patients primary care physician regarding treatment; or (3) administration of a rapid diagnostic test using the Sofia Influenza A+B Fluorescence Immunoassay System, followed by administration of oseltamivir through a physician-sponsored collaborative practice agreement. Patients were contacted via telephone for follow-up 24-48 hours after the initial intervention to identify changes in symptoms. Patients were also asked to complete a paper survey questionnaire regarding their duration of illness, severity of symptoms, health care utilization and time away from work, school or regular activities.□□Results: Anticipated results are decreased duration of illness, decreased health care utilization and decreased time away from work, school or regular activities with the collaborative practice agreement treatment model. □□Conclusions: Data collection is in progress and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the indications of antiviral therapy for the treatment of influenza

Identify the potential benefits and limitations of providing rapid diagnostic influenza testing in the community pharmacy setting

Self Assessment Questions:

The use of antiviral therapy for the treatment of influenza is indicated for patients who have had symptoms present for no longer than:

A 12 hours
B: 24 hours
C: 48 hours
D: 72 hours

What is one potential patient benefit that results from rapid diagnostic influenza testing in the community pharmacy setting?

A Decreased time away from work, school or regular activities
B Increased health care utilization
C Longer duration of illness
D Increased health care costs

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-509 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TOXICITY EVALUATION OF HIGH DOSE ATAZANAVIR/RITONAVIR (ATV/R) VERSUS HIGH DOSE LOPINAVIR/RITONAVIR (LPV/R)

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Purpose: Physiologic and metabolic changes during the second and third trimester of pregnancy decrease antiretroviral drug exposure in HIV infected pregnant women when treated with standard dose atazanavir/ritonavir (ATV/r) or lopinavir/ritonavir (LPV/r). Inadequate drug exposure may lead to unsuppressed maternal viral load and increased risk of perinatal transmission of HIV. Based on available pharmacokinetic evidence, the Department of Health and Human Services Guidelines for treatment of HIV-infected pregnant women recommend an increased dose of preferred protease inhibitors, ATV/r and LPV/r, in the second and third trimester of pregnancy. A paucity of data exist regarding maternal safety of high dose antiretroviral agents and to our knowledge no data exist involving a comparative safety analysis of preferred therapies. The objective of this study is to determine rates of adverse events necessitating discontinuation, dosage reduction, or adjunctive symptomatic therapies for ATV/r versus LPV/r in HIV-infected pregnant women.□□Methods: This retrospective cohort study will be conducted utilizing the electronic health record to identify HIV-infected pregnant women who received high dose ATV/r or LPV/r at the Infectious Disease Center at Northwestern Memorial Hospital from September of 2007 thru January 2013. Demographic information will be collected at the first clinical visit after pregnancy. Maternal toxicities will be assessed by medical chart documentation of diarrhea, nausea, and vomiting as well as laboratory parameters assessing hepatic function. Toxicities will be graded utilizing the Division of AIDS Table for Grading the Severity of Adult Adverse Events. Study endpoints include differences in adverse events, discontinuation of protease inhibitor, and dose reduction of protease inhibitor or symptomatic therapy initiation between the two study groups. A bivariate analysis will be conducted with Students t-tests or Wilcoxon rank sum test for continuous variables and Chi-square test for nominal values. □ □Results: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the rationale for using high-dose atazanavir/ritonavir (ATV/r) and lopinavir/ritonavir (LPV/r) in the 2nd and 3rd trimester of pregnancy

Define common adverse events associated with atazanavir/ritonavir and lopinavir/ritonavir

Self Assessment Questions:

Which of the following protease inhibitors are preferred agents in HIV-infected pregnant women

A Atazanavir/ritonavir

B: Lopinavir/ritonavir

C: Darunavir/ritonavir

D: A & b

Which of the following is a common adverse effect of atazanavir/ritonavi (ATV/r)

A Lower extremity edema

B Vivid dreams, CNS symptoms

C Hyperbilirubinemia

D Thrombocytopenia

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-510 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ESTABLISHMENT AND IMPLEMENTATION OF A CYSTIC FIBROSIS MEDICATION MANAGEMENT SERVICE IN AN ACADEMIC MEDICAL CENTER

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Purpose: □Cystic Fibrosis (CF) is a chronic and debilitating disease requiring complex therapies and high levels of patient monitoring. Pharmacists have been shown to help manage CF medications and care through additional monitoring and patient education. The primary objective of this study is to evaluate the implementation of a specialty CF medication management service on pharmacy utilization. Secondary objectives are to evaluate the number of clinical teaching interventions, patient adherence rates, patient quality of life, and disease progression after program implementation.□□Methods: □This project was conducted in an academic medical center mail service pharmacy. Prior to initiation, this study was determined to be exempt from review by the Institutional Review Board. Patients with CF were eligible to participate if they had used any pharmacy within the academic medical center or if they received care from the organizations CF Center. Pharmacists at the mail service pharmacy were trained on CF disease and medication management and the use of a patient assessment tool developed for the service. Pharmacists called patients on a monthly basis to identify and complete teaching opportunities in medication administration, adherence, and side effect management. □□Retrospective and prospective data were collected for three months prior to and after the intervention and compared to assess impact. Data collected included the number of CF specialty medications sold, number of CF patients using the mail service pharmacy, and revenue generated from specialty CF medications. Patient adherence as calculated by the Medication Possession Ratio (MPR), FEV1, number of exacerbations, and patient quality of life as determined through the Cystic Fibrosis Quality of Life Questionnaire (CF-QOL) were also measured. Number of clinical teachings and patient and pharmacist satisfaction with the program were evaluated post-implementation. □□Results/Conclusions:□This study is still under investigation. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify common clinical teaching points related to cystic fibrosis medication administration, adherence, and side effect management.

Describe symptoms of a cystic fibrosis exacerbation.

Self Assessment Questions:

CF respiratory medications should be taken in which order?

A 1) Hypersal 2) Short-acting bronchodilator 3) Pulmozyme 4)Aeroso

B: 1) Short acting bronchodilator 2) Hypersal 3)Aerosolized antibiotic

C: 1) Short acting bronchodilator 2) Pulmozyme 3)Hypersal 4)Aeros

D: 1) Short acting bronchodilator 2) Asthma controller 3)Pulmozyme

CF exacerbations may include all of these symptoms EXCEPT:

A Increased cough

B Increased sputum or change in color of sputum

C Increased chest wall pain

D Insomnia

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-511 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A TRANSITION OF CARE MEDICATION EDUCATION PROGRAM FOR HEMATOPOIETIC STEM-CELL TRANSPLANTATION PATIENTS

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Hematopoietic stem-cell transplantation (HSCT) is utilized primarily for hematological malignancies. In the HSCT setting, immunosuppressants prophylactic antimicrobials and supportive care medications are frequently prescribed. The discharge process itself is complex, with patients transitioning from inpatient to outpatient care, but further complicated when numerous medications are prescribed. Patients often experience challenges with accessing medications (cost, restricted distribution), comprehending information, and managing side effects.□□Our current HSCT discharge process utilizes an interdisciplinary model (physicians, mid-level practitioners, nurses). Nurses and mid-level practitioners provide discharge medication education, with minimal pharmacist involvement. Physicians have expressed dissatisfaction with this process due to educational gaps identified in the outpatient setting. Studies have shown pharmacist driven discharge education to be effective in numerous patient populations including solid organ transplant; however, there is currently no published literature assessing the impact of pharmacist involvement in the HSCT population. As a result, we have identified an opportunity to increase involvement of pharmacists as part of our interdisciplinary team, specifically as it relates to medication education at care transitions. □□The HSCT inpatient pharmacist will provide discharge counseling, medication education leaflets, and a medication calendar with detailed instructions. The HSCT outpatient clinic pharmacist will assess patient and caregiver(s) understanding of each medication and the medication regimen by administering a questionnaire during the initial clinic visit. Physicians and mid-level practitioners will be asked to complete a satisfaction survey regarding the patient education process before and after the integration of a pharmacist. The results from the questionnaires and staff surveys will serve as primary outcomes. Secondary outcomes will include pharmacist interventions, time spent counseling, readmission rates, and factors affecting medication understanding. This pilot project will evaluate our current process of educating patients and how the integration of pharmacists can improve the discharge process, enhance patient understanding of medications, and impact the quality of care.

Learning Objectives:

Review challenges HSCT patients experience when transitioning from inpatient to outpatient care

Recognize the benefits of pharmacist involvement in medication education during the transitions of care

Self Assessment Questions:

Which of the following statements is correct?

A Patients transitioning from inpatient to outpatient care rarely exper
B: HSCT patients often experience challenges with accessing medica
C: Pharmacist involvement in the discharge education process has sl
D: HSCT patients have simple medication regimens and require limit

The involvement of HSCT pharmacists in a transitions of care education program may:

A Increase the amount of time physicians, mid-level practitioners, an
B Lead to HSCT patients taking their medications incorrectly.
C Improve physician and mid-level practitioner satisfaction with the q
D Result in patients experiencing increased issues with access to me

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-834 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF CLINICAL PHARMACY SERVICES IN THE MANAGEMENT OF ORAL CHEMOTHERAPY IN AN AMBULATORY CARE CLINIC

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Purpose:□The utility of clinical pharmacy services in medication therapy management has been well documented in disease states such as diabetes and hypertension; however, there is limited documentation in the oncology clinic setting. □□Clinical pharmacy services have been provided in the Indiana University Health Hematology-Oncology Clinics for several years and are growing. Clinical pharmacists see patients during clinic appointments and provide services such as evaluation of medication adherence, assessment for potential drug related problems, and education about new chemotherapy. Clinical pharmacists are also available to answer physician or nurse drug information questions. This study aims to quantify and document the utility of clinical pharmacy services in an oncology ambulatory care clinic where pharmacy interventions are already a standard of care for the evaluation of patients taking oral chemotherapy. □□Methods:□Prospective study conducted from October 2012 to June 2013. Patients seen in the Indiana University Health Methodist Hematology-Oncology Clinic and Simon Cancer Cente will be prospectively evaluated. □□Patients will be seen in an Indiana University Health Hematology-Oncology Clinic by a clinical pharmacist. Each patient will receive a chemotherapy specific quiz before and after the clinical pharmacist evaluation and education. □During the patient visit, the pharmacist will evaluate the patients medication adherence and medication profile for the interventions listed below. □Number of side effects evaluated and reported to physician□Number of treatment interventions the clinical pharmacist made to treat the side effect of chemotherapy□Medication reconciliation□Identification of drug-drug, drug-food interactions□Dose changes on oral chemotherapy□Recommendations accepted □□Endpoints:□Aim 1: Evaluate clinical pharmacy education on patient understanding of chemotherapy in an ambulatory care setting.□□Aim 2: Quantify the interventions of clinical pharmacy services in an oncology ambulatory care clinic.□□Results/Conclusion: □To be discussed upon completion o data collection.

Learning Objectives:

Discuss available literature on the impact of clinical pharmacists in the ambulatory setting.

Review key points specific to oral chemotherapy patient education.

Self Assessment Questions:

Impact of clinical pharmacists in the ambulatory care setting is lacking ir which setting?

A Hypertension
B: Diabetes
C: Oncology
D: Dyslipidemia

Key points to educate patients on oral chemotherapy include

A Number of pills to take per dose
B May always be taken without regard to meals
C Handle oral chemotherapy the same as other oral medications
D Only call a healthcare provider if temperature >100.5°F

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-734 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A PHARMACIST-LED POST FALL INTERVENTION IN PATIENTS HOSPITALIZED AT A SINGLE VA MEDICAL CENTER

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PURPOSE: Falling is a serious public health problem among outpatient, inpatient and nursing home residents. One in three patients in the United States age 65 years or older experiences a fall at least once per year, and the risk of falls increases with increasing age. Falls among inpatients have been shown to result in injury, increased length of stay and increased health-system costs. Fall risk tends to increase when patients are taking more than four medications, and studies have shown that pharmacist involvement in medication reviews has been associated with decreased fall rates. As part of the Patient Fall Prevention Program at the Madison VA Hospital, a clinical pharmacist completes a post-fall intervention note evaluating medication use and recommends interventions for the provider to reduce the risk of subsequent falls, however, it is unknown whether these recommendations are being accepted by providers. The purpose of this review is to determine whether pharmacist recommendations are accepted by hospital providers and whether these medication interventions improve patient outcomes related to falling. METHODS: A retrospective chart review will be completed fo up to 200 veteran patients who had a Post Fall Pharmacy Note documented between February 1, 2011 and November 30, 2012. This represents the time period since a clinical pharmacist began performing medication reviews and documenting a post-fall note at the Madison VA Computer generated random numbers will be used to select which patients to review the records of. Data to be abstracted will include age, sex, race, inpatient medications, previous and subsequent falls during hospitalization, vitamin D level, Morse Fall Scale, and which ward the patient was admitted to. Recommendations made by the clinical pharmacist and whether the recommendations were accepted prior to hospital discharge will also be collected.

RESULTS/CONCLUSION: The results and conclusion are pending

Learning Objectives:

Identify the public health impact of falling and the specific risk factors associated with increased incidence of falls

Recognize the role of the pharmacist in evaluating medication use and decreasing the risk of falling

Self Assessment Questions:

Fall risk increases when patients are taking more than how many medications?

A 4

B: 6

C: 10

D: Fall risk has not been associated with medication use

Which class of medications is most strongly associated with increased risk of falls?

A Antihypertensives

B Psychotropics

C Opioid analgesics

D Insulin

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-512 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USING LEAN SIX SIGMA METHODOLOGY TO IMPROVE VANCOMYCIN PRESCRIBING, DISPENSING, AND MONITORING AT A TERTIARY CARE REFERRAL CENTER

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Purpose: With increasing incidence of vancomycin resistant enterococci (VRE) and minimum inhibitory concentration (MIC) creep for gram positive organisms, appropriate vancomycin use has become a primary focus to ensure alignment with best practices at Ministry Health Care. The Centers for Disease Control and Prevention (CDC) addressed the appropriateness of vancomycin use in the Hospital Infection Control Practices Advisory Committee (HICPAC) guidelines. Furthermore, the Infectious Diseases Society of America (IDSA) published vancomycin therapeutic monitoring guidelines for targeting and adjusting vancomycin therapy. The primary objective of this project is to optimize vancomycin use at Ministry Saint Josephs Hospital (MSJH). The secondary objective is to reduce waste by implementing vancomycin dose standardization and re-allocating pharmacy resources. Methods: The five phases of six sigma project methodology, which include define, measure, analyze, improve, and control (DMAIC), were used to drive this process improvement. Additionally, lean methodology was incorporated to reduce waste. Patients age 19 or older with intravenous vancomycin use for empiric therapy or treatment of a documented infection were included. Patients receiving vancomycin for prophylactic surgical use or continuing therapy started prior to admission were excluded. A baseline retrospective chart review was conducted on 50 random patients who received intravenous vancomycin at MSJH in October 2012. Indications for use, site of infection, length of therapy, cultures, antibiotic sensitivities, and antibiotic de-escalation events were evaluated to determine appropriateness of use. Preliminary Results: According to guidelines, after 72 hours o use, vancomycin was inappropriate in 59.5% of patients. Value stream mapping revealed pharmacists spend an average of 35 minutes determining appropriate vancomycin dosing and documenting initial consult notes. Work in progress includes finalizing a vancomycin dosing algorithm, educating pharmacy staff, and implementing new protocols to reduce variation and eliminate waste. Final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize situations in which the use of vancomycin is appropriate or acceptable

State the five phases of six sigma project methodology

Self Assessment Questions:

According to the HICPAC guidelines, which of the following is an acceptable use of vancomycin?

A Treatment in response to a single blood culture positive for coagul

B: Eradication of MRSA colonization

C: Routine surgical prophylaxis other than in a patient who has a life-

D: Treatment of serious infections caused by beta-lactam resistant gr

What are the five stages of six sigma project methodology?

A Determine, Investigate, Measure, Analyze, Control

B Define, Measure, Analyze, Improve, Control

C Define, Investigate, Analyze, Input, Control

D Determine, Measure, Analyze, Input, Control

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-513 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLOSTRIDIUM DIFFICILE TREATMENT UTILIZATION REVIEW AT AI ACADEMIC MEDICAL CENTER

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Purpose:□□The Infectious Disease Society of America and the Society for Healthcare Epidemiology of America provide succinct guidance on initial cases of Clostridium difficile infection (CDI); but, lack firm evidence based recommendations for refractory and recurrent CDI. This is due to a general lack of evidence, availability of new products such as fidaxomicin, and literature on new treatments such as the fecal microbiota transplant, at the time of the guidelines release in 2010. Additionally, guidance is minimal on the use of expensive agents that have minimal evidence for efficacy in the treatment of CDI, such as rifaximin and Intravenous Immunoglobulins (IVIG). The lack of guidance and difficulty treating CDI has lead to inconsistent treatment regimens and controversy on pharmacotherapy selections for our patients at Froedtert Hospital (FH). We anticipate that standardization of a treatment guideline and better education for prescribers on CDI would improve consistency and prescribing adherence to treatment guidelines and potentially decrease the use of rifaximin and IVIG use for CDI.□□Methods:□□This was a retrospective study evaluating the effectiveness of reducing rifaximin and IVIG use for the treatment of CDI following the implementation of a FH CDI treatment guideline. All patients age 18 years and older admitted to FH with a positive Clostridium difficile nucleic acid amplification test (NAAT) were included in the study.□□The primary outcome compared the number of doses of rifaximin and IVIG administered for the treatment of any diagnosed CDI six months prior to and six months following the FH CDI treatment guideline. Secondary outcomes may include: 30 day readmission, length of stay, and inpatient costs for CDI treatment.□□Results: Pendin

Learning Objectives:

Describe the evidence for use of fidaxomicin, rifaximin, and IVIG for the treatment of CDI in the acute care setting

Define and discuss the differences in treatment approaches for recurren versus refractory CDI

Self Assessment Questions:

What is the concern with extended treatment durations for CDI with metronidazole?

A Peripheral neuropathy

B: Myelosuppresion

C: Nephrotoxicity

D: QTc prolongation

Which of the following patient scenarios could be considered refractory CDI?

A Presentation of symptoms eight weeks after successful resolution

B Persistence of symptoms seven days following oral metronidazole

C Patient receiving oral vancomycin therapy for twelve hours for susp

D Positive Clostridium difficile NAAT result on day 9 of 10 of fidaxom

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-514 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ENHANCING AND STANDARDIZING PHARMACISTS ABILITY TO DOCUMENT IN A PATIENTS ELECTRONIC MEDICAL RECORD

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Background: Consistent with the Pharmacy Practice Model Initiatives (PPMI) beliefs, pharmacists should be required to document and sign recommendations and progress notes in patients' medical records. Currently at Aurora Health Care there has been little standardization in the quality of progress notes written by pharmacists. Progress notes car either be written by the pharmacist as free-text or using a pre-built template which has not been customized. These options have resulted in a variety of styles for progress notes.□□Purpose: The objective of this project is to establish a process for standardizing pharmacist documentation at Aurora Health Care.□□Methods: A review of the current literature was conducted to determine if any standards of practice regarding pharmacist documentation or progress notes have been established. A survey was created and sent to pharmacists responsible for making system-wide decisions for all hospitals in Aurora Health Care. The survey identified which progress note was most crucia to standardize and implement first along with a list of future progress notes. Initial data on the consistency of the first to-be designed progress note was collected. This determined baseline data to compare to the results after the standardization process. Based off of best practices for medical progress notes, a draft progress note was created focusing on the assessment and plan of patients drug therapy. This draft was sent to the information technology department to build the finalized template. The progress note template will then be implemented through out all Aurora Health Care hospitals. Final data will be collected to assess adoption of the new standardized progress note template.
□□

Results/Conclusion: Data collection is in progress; results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Describe key elements that should be included in each progress note in order to consistently provide pertinent information for other health care providers.

Identify the benefits for standardizing progress notes written my pharmacists across a health care system.

Self Assessment Questions:

List two key elements that should be included in each progress note written by a pharmacist regarding drug therapy

A Problem and plan

B: Recommendation and plan

C: Current plan and future plan

D: Assessment and plan

List one benefit for standardizing progress notes written by pharmacists across a health care system

A Patients will be able to read their notes

B Improves efficiency in a large health care system

C Allows for pharmacists to spell check their notes

D Reduce potential medication errors

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-735 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

VETERANS WITH DYSPHAGIA: ASSESSMENT AND TREATMENT FOR FRACTURE RISK

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Purpose: Due to shared comorbidities, many older patients with dysphagia may be at high risk for fracture. These comorbidities include Parkinsons disease, dementia or Alzheimers Disease, stroke, chronic obstructive pulmonary disease (COPD), or being underweight. It is unknown to what extent patients with dysphagia who are at high fracture risk are assessed for osteoporosis and how many do in fact receive treatment. The primary question of this study is: what percentage of older veterans with dysphagia who are at high fracture risk are being treated to reduce fracture risk? Methods: Computer records at the William S. Middleton Memorial Veterans Hospital will be used to identify veterans at least fifty years of age who have been assessed for dysphagia per Current Procedural Terminology (CPT) code of 92611 during the period of 1/1/2005 through 10/1/2011. Computer generated random numbers will be used to select patients for retrospective chart review from that list and up to 150 patients who meet all study criteria will be enrolled. Our primary study outcome is the proportion of veterans with mild-moderate to severe dysphagia who meet osteoporosis treatment criteria per FRAX that have received treatment for osteoporosis. Secondary outcomes include: the proportion of veterans with dysphagia who meet treatment criteria; the proportion of veterans with dysphagia who were evaluated for fracture risk (BMD measurement osteoporosis listed in problem list within primary care progress notes, or osteoporosis listed per ICD-9 code); frequency of comorbidities that may link dysphagia and osteoporosis (Parkinsons Disease, dementia or Alzheimers Disease, history of stroke, being underweight, or COPD); and severity of dysphagia in the patient population at our facility (mild-moderate, moderate, moderate-severe, severe). Results: To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Conclusions: To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the Fracture Risk Assessment Tool (FRAX) and how to apply it to practice.

Discuss the comorbidities that may be shared between osteoporosis and dysphagia

Self Assessment Questions:

With what FRAX score should you consider treatment for osteoporosis?

A 10-year probability of a hip fracture ≥ 3% or a 10-year probability o
B: 10-year probability of a hip fracture ≥ 5% or a 10-year probability o
C: 10-year probability of a hip fracture ≥ 5% or a 10-year probability o
D: 10-year probability of a hip fracture ≥ 2% or a 10-year probability o

Which of the following has been found to be associated with symptomatic oropharyngeal dysphagia in up to 52% of patients and places the patients at an increased risk for falls?

A Chronic Obstructive Pulmonary Disease (COPD)
B Parkinson's Disease
C Malnutrition
D Gastroesophageal Reflux Disease (GERD)

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-515 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF A CURRENT HEPARIN ALGORITHM IN OBESE PATIENTS AND TIME TO ACHIEVE THERAPEUTIC DOSES

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Purpose: Although heparin has been used for decades as a standard approach for anticoagulation, the optimal dose for obese patients remains controversial. Weight based dosing has been instituted as standard practice, but adequate heparin levels appear to coincide with blood volume rather than weight. This association suggests higher risk and less predictability in obese patients. The purpose of this study is to review a current heparin algorithm to evaluate dosing strategies and associated adverse events. The intent is to use this data for implementation of a revised algorithm and subsequent education of healthcare professionals. Methods: The institutional review board approved this retrospective chart review of 150 patients who received weight-based heparin therapy from May through October 2012. The electronic medical record was utilized for data collection. Patients were excluded if pregnant, less than 18 years of age, they had received less than 2 documented anti Xa levels, or had an international normalized ratio of greater than 2 upon heparin initiation. The primary study outcome is an evaluation of time to therapeutic anti Xa levels per indication. Secondary outcomes include initiation dose and adverse effects, as well as the impact of age, weight, renal dysfunction, gender, and location within the institution with regards to therapeutic level.

Preliminary Results: A total of 150 patients were identified for study inclusion. Current analysis indicates that 42% of patients achieved therapeutic levels within 24 hours and 21% never achieved a therapeutic level. Conclusions: Preliminary data suggests obese patients who received full weight based heparin dosing achieved adequate therapeuti levels with few adverse events. Dosing recommendations have not beer established at this time. Data analysis is ongoing and comprehensive results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss difficulties associated with heparin dosing in obese patients to provide the audience with the applicability to clinical practice.

Identify heparin dosing strategies used for obese patients to provide the audience with an array of approaches.

Self Assessment Questions:

1.Evidence has shown that heparins volume of distribution significantly correlates with blood volume. This creates issues with obese patients since:

A Heparin is distributed extensively in adipose tissue
B: Obese patients have low blood volume
C: Blood volume in adipose tissue is less than that of lean tissue
D: A greater blood volume proportional with weight still results in exce

The optimal heparin dosing strategy recommended for obese patients is

A Weight-based dose according to Ideal Body Weight (IBW) if at ris
B Weight-based dose according to an Adjusted Body Weight (ABW)
C Weight-based dose according to Total Body Weight (TBW) if < 13
D The optimal dosing regimen remains inconclusive at this time

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-516 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF ORAL VANCOMYCIN DOSE ON OUTCOME FOR THE TREATMENT OF SEVERE C. DIFFICILE INFECTION (CDI)

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Purpose: Current guidelines from the Infectious Diseases Society of America recommend oral vancomycin 125 mg every six hours as the drug of choice for the treatment of severe CDI. The recommendation is based on a retrospective analysis showing vancomycin to be superior to oral metronidazole , and data demonstrating no difference in outcomes between low (125 mg) and high (500 mg) dose vancomycin regimens. However, many clinicians frequently prescribe higher doses (250, 500 mg) of oral vancomycin for severe CDI. The aim of this study is to determine if higher doses of oral vancomycin improve outcomes in severe CDI.□□Methods:□The health system microbiologic database wil be searched for positive C. difficile PCRs from July 2010-July 2012. Patients with severe CDI (defined as a white blood cell (WBC) count ≥ 15,000 cells/L or serum creatinine (SCr) level ≥1.5 times premorbid level) treated with oral vancomycin will be included. Patients will be excluded if age <18 years, receiving adjunctive C. difficile therapy, or if they have mild-moderate CDI severe-complicated CDI (Ileus, megacolon, hypotension (mean arterial pressure ≤65) or septic shock (2/4 SIRS criteria, end-organ dysfunction, refractory hypotension), or other bowel diseases. □□The primary objective is to determine if increased doses of oral vancomycin for the treatment of severe CDI will reduce rates of clinical failure. Clinical failure will be a composite endpoint consisting of any of the following: diarrhea >5 days, need for additional drug or change from oral vancomycin, progression to severe-complicated disease or death. □□The secondary outcomes include the impact of vancomycin dose on time to resolution of diarrhea, length of stay (LOS), intensive care unit LOS, disease recurrence, and mortality. □□

Results: Data currently under review, results to be presented at Great Lakes Pharmacy Resident Conference. □□Conclusion: Data currently under review, conclusion to be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Explain the pathophysiology of Clostridium difficile infection.

Discuss previous oral vancomycin literature and describe strengths and limitations

Self Assessment Questions:

Clostridium difficile accounts for what percentage of cases of nosocomial antibiotic-associated diarrhea?

A <10%
B: 15-25%
C: 50-60%
D: 80%

Which of the following conditions could impair enteric absorption of oral vancomycin, necessitating higher doses?

A Ileus
B Septic shock
C Leukocytosis
D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-517 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A WEB-BASED APPLICATION FOR CONTINGENCY DRUG INVENTORY

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Background: Research has shown that pharmacy oversight of medications in all care locations can provide substantial improvement in safety and quality. The feasibility of this task in large hospitals, however, has been difficult due to the complexities of the medication use process. Timely removal of expired medications, required by law and The Joint Commission, has also become another challenge for personnel once medications leave the pharmacy. Currently, the Cleveland Clinic Pharmacy Department supplies and oversees more than 500 drug boxes for the Main Campus. Medications within these boxes are used for advanced cardiac life support, anesthesia-related emergencies, and adverse reactions to contrast dyes. PharmacyKeeper is an electronic inventory management system designed to improve inventory control of drug boxes through the use of bar code technology and electronic record keeping. The web-based system electronically stores the NDC, lot, and expiration information for medications contained within drug boxes and tracks the destination location and return to pharmacy using bar code technology. In addition, reports can be utilized to determine medication use history for billing and also for drug utilization purposes. Radio-frequency identification (RFID) will also be utilized to locate expired boxes within the hospital. □□Objectives: Implement web-based contingency inventory management program. Determine cost effectiveness of removing items from drug boxes due to non-utilization and improve cost capture of medications used on unidentified patients.□□Methodology: Quality improvement project within the Department of Pharmacy at Cleveland Clinic Main Campus. Medication, location, and box library were created based on the needs of the facility. Barcode training was facilititated to train the system to recognize medications. Pharmacists and pharmacy technicians were trained to use system properly. At the time of publication, pilot implemented with plans to expand to all box types in future.□□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Express the importance of contingency drug inventory monitoring and compliance

Outline the process of implementing a drug inventory management system for drug boxes

Self Assessment Questions:

Which of the following safety precautions was followed during the implementation of PharmacyKeeper?

A Look alike- sound alike warnings
B: Biometric scanning for pharmacists
C: ISMP Tall-man lettering
D: ISMP Do Not Crush list

The Cleveland Clinic has roughly 500 of this type of contingency drug box:

A Anesthesia box
B Code blue box
C Contrast reaction box
D Stress box

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-736 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF RIVAROXABAN VERSUS FONDAPARINUX FOR POSTOPERATIVE THROMBOPROPHYLAXIS IN PATIENTS UNDERGOING HIP OR KNEE ARTHROPLASTY

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Purpose: Rivaroxaban was approved by the Food and Drug Administration in July 2011 for deep vein thrombosis (DVT) prophylaxis in patients undergoing hip or knee replacement surgery. The RECORD trial series concluded that rivaroxaban demonstrates superior efficacy to enoxaparin in preventing DVT, nonfatal pulmonary embolism, or death while maintaining a similar risk of major bleeding events. No currently published study evaluates the incidence of aforementioned events between rivaroxaban and fondaparinux. The purpose of this study is to compare the efficacy and safety of rivaroxaban versus fondaparinux in patients undergoing hip or knee arthroplasty. Methods: This retrospective, single-center, observational cohort study will include patients undergoing hip or knee arthroplasty who received fondaparinux or rivaroxaban between November 1, 2010 and July 31, 2012. Patients are matched in a 1:1 fashion according to age, gender, weight, surgery type, and surgeon. Patients less than 18 years old or with a standardized creatinine clearance less than 30 milliliters/minute will be excluded. Primary outcomes will be incidence of venous thromboembolism (VTE) and major bleeding; secondary outcomes will include readmission rate and mortality, all at 35 days post-surgery. Additional data to be collected include: age, gender, weight, body mass index, body surface area, serum creatinine, creatinine clearance, smoking history, concurrent anticoagulants and antiplatelets, history of VTE, history of malignancy, type of surgery, surgeon, surgery start and end time, time of first hospital dose, length of therapy during hospital admission, and length of admission. Data will be obtained from inpatient records. Results & Conclusions: Data collection is ongoing. Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference in April.

Learning Objectives:

Recognize potential consequences of venous thromboembolism.

Identify appropriate length of thromboprophylaxis after hip or knee arthroplasty from evidence-based recommendations.

Self Assessment Questions:

Potential consequences of venous thromboembolism include:

A pulmonary hypertension and reduced long-term morbidity

B: decreased length of stay and sudden death

C: post-thrombotic syndrome and decreased patient quality of life

D: lower treatment costs and increased mortality

How long do the 2012 ACCP Antithrombotic Guidelines recommend extending thromboprophylaxis after major orthopedic surgery?

A 10 days from the day of surgery

B 14 days from the day of surgery

C 25 days from the day of surgery

D 35 days from the day of surgery

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-518 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MULTIPLE MINI-INTERVIEWS IN PHARMACY RESIDENT SELECTIO

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Background/Purpose: The resident interview is the highest-rated means of communication between an residency program directorRPD and a potential resident. However, the traditional interview process has a number of issues including potential foris often subject to interviewer bias and does not appear to may not provide true insight into the character of residents. Further, success on a traditional interview assessing academic attributes does not predict success in pharmacy school, licensure examinations, orand as a medical practitioner. The multiple mini-interview (MMI) has been proposed as a means to decrease interviewer heterogeneity and evaluate soft skills such as critical thinking and ethical reasoning. MMI and has been validated in both medical residencies and Ccolleges of Ppharmacy. The objective of this study was to evaluate the feasibility of multiple mini-interviews (MMI as an assessment of non-academic attributes in PGY1 pharmacy residency candidates at an academic medical center. Methods: A single-center study was conducted with the following objectives: to evaluate the feasibility of multiple mini-interviews from both an interviewer and candidate perspectives, and to examine correlations between characteristics assessed via MMI and via traditional interviews. Using modified models from McMaster University, an interview schedule was developed to incorporate MMI strategies into the traditional PGY1 interview process. Upon completion of the interview day, both candidates and interviewers completed a survey regarding their experience and opinions of the MMI process. Scores on MMI components of interviews were then compared with scores across traditional candidate score metrics. Results: Data collection is in progress. Results will be interpreted presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize limitations of the current interview process PGY1 pharmacy residency interviews.

Discuss the capabilities of multiple mini-interviews (MMI) to improve the current interview process.

Self Assessment Questions:

Which of the following are limitations of the current interview process that may be overcome through use of multiple mini-interviews (MMI)?

A Inter-interviewer heterogeneity

B: Inter-item (station) heterogeneity

C: Gender discrepancies

D: All of the above

Multiple mini-interviews have been rated as _____ when compared to traditional interviews.

A Less enjoyable

B More stressful

C More effective

D Difficult to implement

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-737 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

GLUCOSE VARIABILITY AND LENGTH OF HOSPITAL STAY

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Background:□Current published guidelines for inpatient glucose control (including those at Hines VA) target specific glucose levels depending on acuity of their unit (ICU vs. general medicine) to optimize patient outcomes. Minimizing glucose variability has been proposed as an alternative target to accomplish better patient outcomes such as decreased hospital length of stay (LOS). Poor glycemic control has been identified as an independent risk factor for negative patient outcomes. Hyperglycemia has been associated with decreased humora immunity, increased infection rate, and increased cardiovascular events. Hypoglycemia has been associated with increased mortality risk. Both have been associated with increased LOS.□□Purpose:□The primary purpose is to determine whether patients presenting with hyperglycemia and experiencing the least glycemic variability have a shorter hospital length of stay.□□Methods:□A list of patients admitted tc a general medicine floor over a five year period (1/1/2007-1/1/2012) will be randomized. The first 600 patient charts meeting inclusion criteria (age >18, minimum of three days inpatient, minimum of three daily POC measurements each inpatient day) will be separated into quartiles basec on degree of glucose variability, determined by standard deviation. Additional demographic and outcome data will be obtained for patients ir the first and fourth quartiles (300 charts). Patients in quartile one will be compared to those in quartile four for the primary endpoint of overall LOS as well as the secondary endpoints: infection rate, ICU admission, and readmission within 30 days. □□Data Analysis:□An estimated 300 patient charts (150 per quartile group) are required to detect a difference of 0.5 inpatient days between groups and yield a power of 80%. Primary outcome data will be evaluated by t tests for continuous variables and chi-square or Fishers exact test for categorical variables. Logistic regression will control for baseline differences between groups.□□Results/Conclusions: Data collection is in progress.

Learning Objectives:

Identify the blood glucose goals recommended by Endocrine Society guidelines for non-critical hospitalized patients.

Recognize patients who should be routinely monitored for adequate glucose control

Self Assessment Questions:

Which of the following is an appropriate fasting glucose level based on the 2012 Endocrine Society guidelines for a non-critical hospitalized patient?

A < 100 mg/dL
B: < 140 mg/dL
C: < 180 mg/dL
D: < 200 mg/dL

According to the Endocrine Society guidelines, who should receive POC glucose monitoring at least every four-to-six hours?

A Patients who are NPO
B Patients admitted without a pre-existing diagnosis of diabetes and
C Patients admitted without a pre-existing diagnosis of diabetes and
D Patients admitted with a pre-existing diagnosis of diabetes

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-738 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PROCALCITONIN LEVEL IN A COMMUNITY HOSPITALS ANTIMICROBIAL STEWARDSHIP PROGRAM

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Purpose:□Procalcitonin (PCT) is a peptide precursor, which in response to bacterial proinflammatory stimulus levels, will rise from a normal level of <0.25 ug/mL. The literature has shown decreased length of therapy (LOT) and antibiotic prescribing with no difference in outcomes when using PCT levels to determine therapy. Currently, 0.25 ug/mL is the threshold used in many study protocols to determine need for antibiotic therapy. Using this threshold, PCT levels may assist in identifying bacterial infections; then streamlining, de-escalating, and discontinuing antimicrobial therapy. The purpose of this research project is to determine the impact of PCT levels on antibiotic therapy in patients with an initial diagnosis of COPD exacerbation, pneumonia, or sepsis at Franciscan St. Margaret Health (FSMH), an 800 bed, 2 campus community hospital in Northwest Indiana.□□Methods:□This was an institutional review board approved retrospective chart review. Patients 18 years of age and older were included in the study. Patients in the control group were admitted prior to (January - March 2012) and patients in the study group were admitted after (May - August 2012) the availability of PCT levels at FSMH with the diagnoses of COPD exacerbation, pneumonia, or sepsis were included in the study. Patients in the study group were defined as PCT level < 0.25 ug/mL. Data was collected using a standardized data collection form and the hospitals electronic medical record. Information collected included: patient demographics, indication for antibiotic therapy, PCT levels, adjustment of therapy due to PCT levels, type of antibiotic therapy, LOT, use of antibiotics on discharge, readmission, and mortality. The primary outcome included the adjustment of therapy based on PCT levels. Secondary outcomes included LOT and patient outcomes.
□□
Results/Conclusions: □Data collection is currently ongoing. Final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the diagnoses in which procalcitonin levels should be obtained according to current literature

Explain the use of procalcitonin levels in an antimicrobial stewardship program

Self Assessment Questions:

According to current literature, procalcitonin levels should be obtained in patients with _____ to determine the presence of a bacterial infection.

A Possible urinary tract infection
B: Possible diverticulitis
C: Possible respiratory tract infection
D: Possible osteomyelitis

A patient with a COPD exacerbation is admitted through the ER. The patients procalcitonin level is 0.13 ng/dL prior to initiation of antibiotics, what recommendation can be made for the patient?

A Discontinue antibiotics
B De-escalate antibiotics
C Continue current antibiotics
D Escalate antibiotics

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-519 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ROOT CAUSE ANALYSIS FOR 30 DAY READMISSION FOLLOWING KIDNEY TRANSPLANTATION

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Purpose: Following kidney transplantation, patients are required to take complex medication regimens to prevent complications. Identifying the root causes of medication-related readmission following kidney transplantation would allow for the development of system-level interventions that optimize post-operative care and decrease preventable readmissions. The primary objective of this study is to determine the association between follow-up phone calls during transitions of care and hospital readmission rates within 30 days of discharge following kidney transplantation. The secondary objective is to identify root causes for the 30 day readmissions that are associated with medication.

Methods: This is a retrospective cohort review of patients who underwen kidney transplantation at the University of Michigan Health System between July 2010 and June 2012. Patients having multi-organ transplants and patients under the age of 18 will be excluded from the analysis. All data will be collected from patients electronic medication records housed within CareWeb and the Organ Transplant Information System. For the primary objective, a chi-square test will be performed to determine if there is an association between follow-up phone calls after discharge and 30 day readmission rates, and a p-value <0.05 will be considered significant. For the secondary objective, an aggregate root cause analysis will be performed in patients who were readmitted within 30 days of kidney transplantation in the above cohort. Two investigators will review admission records and classify root causes for medication-related readmissions as prescribing, monitoring, access, adherence, education, or communication. Results will be reported as the frequency of each root cause class. This study has been approved by the Institutional Review Board of the University of Michigan Health Systems.

Learning Objectives:

Identify risk factors for 30 day readmission in kidney transplant patients.

List potential transitions of care that can be used in kidney transplant patients.

Self Assessment Questions:

According to this study, patients may be more likely to be readmitted within 30 days of kidney transplantation if:

A They do not receive discharge planning

B: Their length of stay following transplant is 4 days or longer

C: They do not receive medication reconciliation

D: They have a history of diabetes

Potential transitions of care that may be employed in kidney transplant patients include:

A Medication reconciliation

B Follow-up within 48 hours

C Pharmacist medication teaching

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-835 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A SCREENING TOOL TO ASSESS PHARMACIST INTERVENTION ON DEPRESCRIBING IN THE GERIATRIC POPULATION

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Purpose: The elderly aged 65 years or older consume a large percentage of prescriptions and often take several medications concurrently. Therefore, this population is potentially at higher risk for adverse drug events due to multiple drug use. Pharmacists are in a position to provide interventions that may decrease these possible adverse drug events. The objective of this study is to assess the ease of implementing a validated screening tool to reduce inappropriate medications in the geriatric population.Methods: This study was reviewed and expedited by the Institutional Review Board. The study population includes all pharmacists on staff at the facility. A retrospective review from July to December 2012 provided data on the current accepted practice model of the institution before implementation of the validated tool known as Screening Tool of Older Persons Prescriptions (STOPP) criteria. Pharmacists apply STOPP criteria wher evaluating the medication profiles of inpatients 65 years or older on five or more active medications. Data collected using the facilitys electronic medical record system includes patient age, gender, number of medications, offending medications, specific STOPP criteria utilized, number of interventions recommended, and number of interventions accepted by the attending physician. No patient specific data will be published. Pharmacists answered pre and post-test questions to assess their comprehension before and after reviewing a teaching module abou STOPP criteria. After using the validated tool for a set time period, pharmacists will complete a survey to measure the organization of STOPP criteria, ease of use, time efficiency, and whether changes to th criteria need to be implemented to further assist pharmacists utilization. Pharmacist recommendations are reviewed by the attending physician who will independently decide to accept or reject the recommendation.

Results/Conclusion: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the dangers of polypharmacy in the geriatric population

Identify opportunities to incorporate STOPP criteria into practice

Self Assessment Questions:

Multiple medication use seen in the geriatric population may relate to adverse drug events due to which of the following:

A Duplicate therapies

B: Drug-drug interactions

C: Decreased sedation from drug accumulation

D: A and B

Mr. H is an 81 year old male who is recovering in the transitional care unit from pneumonia. His PMH is significant for peptic ulcer disease, benign prostate hypertrophy, and anxiety. From his home

A Prazosin 5mg po qhs

B Aspirin 162mg po daily

C Lorazepam 0.5mg po daily prn anxiety

D Multi-vitamin po daily

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-836 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING PERCEPTIONS OF HIV PATIENTS AND DETERMININ IF A GENERATION GAP EXISTS

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Purpose: Treatment for HIV has changed drastically over the last 20 years. It has transformed from complex regimens with multiple doses and severe side effects to once daily regimens with minimal side effects. The purpose of this research is to evaluate HIV patient perceptions to aid in future counseling tactics and to provide pharmacists with insights on how to better interact with HIV patients.□□Methods: This is a cross-sectional knowledge, attitudes, and practice study which compares the perceptions of HIV patients based upon years of treatment. It is hypothesized that patients taking HIV medication for greater than 10 years will have different perceptions than those that have been taking medication for less than 10 years. Data collection will occur from November 1, 2012 - February 28, 2013 at a university based infectious diseases clinic in Springfield, Illinois. The measures of the study include HIV patient perceptions of quality of life, fear, safe sex, healthcare, disease, medications, and optimism for a cure. The sample includes HIV-positive participants selected from chart reviews meeting criteria of current HIV treatment. Participants must be at least 18 years old, English speaking, currently receiving HIV medication, and provide verbal informed consent to be eligible for research. Surveys will be conducted face to face at the end of clinic visits. □□Results/Conclusions: Data collection and evaluation is currently in progress. Results will be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify factors that contribute to patient nonadherence to antiretroviral regimens.

Discuss the role of pharmacists in educating HIV patients.

Self Assessment Questions:

Which of the following factors contribute to nonadherence to antiretroviral regimens:

A strong social support

B: simplified drug regimens

C: insurance coverage issues

D: history of substance abuse

Which strategy listed below is recommended to improve patient adherence to antiretroviral therapy:

A establish patient readiness to start antiretroviral therapy

B avoid multidisciplinary teams to prevent patient confusion

C involve the patient in antiretroviral treatment selection

D both A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-638 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

PATIENTS PERCEPTIONS OF A COMMUNITY PHARMACY-BASED NEW PARENT PROGRAM IN THE URBAN AND INNER CITY POPULATION

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Background: □Patients trust pharmacists as health care providers and value their recommendations regarding pharmaceutical care. Pharmacists have the knowledge to deliver valuable patient care to all patient populations including pregnant and pediatric patients. Grocery store chain community pharmacists are in a unique position to provide direct patient care to expectant and new parents. This type of pharmacy not only contains a qualified medication expert, the pharmacist, but also provides convenient access to an extensive selection of common pregnancy, post-partum, and baby nonprescription medications and products. □□Purpose: □The objectives of this study are to assess patients perceptions of a community pharmacy based new parent program and to assess patients knowledge gained from participation in the program.□□Methods:□This survey-based, prospective, multi-site pilot study consists of the development and implementation of a New Parent Program in a grocery store pharmacy setting. Pharmacy staff and flyers were utilized to recruit patients into the study. Inclusion criteria include patients > 18 years of age who are expectant parents, new parents, support parents, caregivers, nannies, or relatives of the previously stated individuals. At the time of enrollment, patients completed a pre-survey, which gathered demographic data and baseline knowledge. The service consists of an educational session, where topics such as proper medication measurement were discussed, and a store tour. The community pharmacist navigated patients through the store, highlighted the location of pregnancy, post-partum, and infant nonprescription medications and products, and reinforced information provided during the educational session. Patients completed a post-survey immediately following the conclusion of the program. The pre- and post-surveys are composed of multiple choice questions and items to rate on a five-point Likert scale and will assess the objectives of the study. Descriptive analysis will be performed on the data collected.□□Results:□Results and conclusions to be presented at Great Lakes Residency Conference.

Learning Objectives:

Identify the need for patients to receive education about safe and effective pregnancy, post-partum, and baby nonprescription medications and products.

Describe the community pharmacists role in providing education to patients about safe and effective pregnancy, post-partum, and baby nonprescription medications and products.

Self Assessment Questions:

Which of a following is a result of a lack of patient understanding regarding the safety and efficacy of pregnancy, post-partum and baby nonprescription medications and/or products?

A The proper usage of nonprescription medications and/or products

B: The appropriate selection of nonprescription medications during pr

C: The occurrence of nonprescription medication overdoses

D: The correct measurement of nonprescription medications

Which of the following measures can a community pharmacist implement when providing education to patients about safe and effective pregnancy, post-partum, and baby nonprescription medications and proc

A Referring patients to a pediatrician or obstetrician and gynecologis

B Demonstrating proper measurement techniques when using dosin

C Only including information about the most common nonprescriptio

D Offering limited counseling sessions at the pharmacy for patients

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-837 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING BARRIERS TO ADHERENCE TO ORAL ANTICANCER AGENTS

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Approximately 25% of investigational drugs in oncology are oral, a figure that is expected to grow exponentially. This trend in oncology, as well as patients perceptions regarding oral therapy, has forced clinicians to more closely examine a variety of patient-specific factors before prescribing oral anticancer medications. These include: adherence, adverse effects dose adjustments, drug-drug interactions, and safe handling. Perhaps the most important, however, is determining if a patient will be adherent to oral therapy. Though there has been speculation regarding possible predictors of poor compliance to oral anticancer agents, none have been well studied. This study is a survey-based prospective study aimed at identifying patient-specific barriers to oral anticancer agents. Patients are being recruited at the University of Illinois Hospital & Health Sciences System Outpatient Care Center (OCC) Oncology Clinic Pharmacy. Patients are asked to complete a demographic questionnaire and the validated, ASK-20 survey developed by GlaxoSmithKline. The ASK-20 survey is specifically designed to identify barriers to compliance a patient feels he has been faced with throughout the course of therapy, as well as any potential barriers that a patient believes he will face in the future. Secondary endpoints of this study investigate the correlation between specific barriers and age, gender, insurance status, education level, primary language, severity of illness, comorbidities, or number of concomitant medications taken. Through these results, healthcare providers will be able to identify patients who are candidates for oral anticancer agents. By definitively indentifying patient-specific barriers to adherence, healthcare providers can establish ways to measure a patients readiness to accept the responsibility of these agents, as well as predict which patients are at risk for non-adherence. Most importantly, it will allow pharmacists to prospectively design customized compliance plans aimed at overcoming barriers identified through these surveys. Survey administration, data collection, and data evaluation are in progress.

Learning Objectives:

List potential factors that should be considered prior to initiating oral anticancer therapy

Describe the main categories covered by the questions on the ASK-20 survey

Self Assessment Questions:

Which of the following is a factor that should be considered prior to initiating oral anticancer therapy?

A Drug-drug interactions
B: Adherence
C: Safe handling
D: All of the above

Which of the following major categories is addressed in the ASK-20 survey?

A Lifestyle
B Insurance etatus
C Level of education
D Concomitant disease states

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-839 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

READMISSION IN PATIENTS WITH BACTEREMIC URINARY TRACT INFECTIONS

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Purpose: The purpose of this study is to describe 30-day readmission among patients with bacteremia secondary to urinary tract infection (UTIs) and to develop recommendations for pharmacy interventions to improve care of patients with UTI. Study Design: This study is a retrospective cohort study with nested case control. Patients included in the cohort are those with a UTI and subsequent bacteremia with both urine and blood cultures growing the same organism(s), admitted to the Henry Ford Hospital main campus, and treated with antibiotics for ≥ 48 hours in the hospital. Patients that will be excluded are those who are treated for <48 hours of antibiotics while in the hospital, if death or hospice upon discharge or within 30 days of discharge, and presence of spinal cord injury or dementia at baseline. The primary endpoint for analysis is 30-day readmission. Incidence of readmission will be determined by evaluating the number of patients within the cohort who were readmitted within 30 days. From the cohort, a nested case control will be used to identify potential modifiable risk factors for readmission. One hundred consecutive readmitted patients will be compared to non-readmitted patients, matched in a 1:1 ratio by location of initial inpatient stay (ICU or ward.) For statistical analysis, a univariate analysis will be done, using the chi-square test for categorical variables, and an unpaired t-test will be used to analyze continous variables. Factors found to be significant in the univariate analysis will be entered into a multivariate analysis to determine independent risk factors for readmission. Results & Conclusions: To be presented at the Great Lakes Conference

Learning Objectives:

Review the literature on readmission in patients with urinary tract infections

Identify the risk factors for readmission in bacteremic UTI patients

Self Assessment Questions:

Based on previous literature, which of the following is a predictor of mortality in patients with bacteremic UTIs?

A Presence of diabetes
B: Admission to the ICU
C: APACHE II score >15
D: Inappropriate antibiotic therapy

Approximately what percentage of women experience a recurrence of UTI within one year?

A 20-30%
B 40-50%
C 60-70%
D 70-80%

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-838 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HIGH-DOSE VERSUS LOW-DOSE BEAM CONDITIONING FOR AUTOLOGOUS STEM CELL TRANSPLANTATION IN NON-HODGKINS LYMPHOMA

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Purpose: The combination of carmustine, etoposide, cytarabine and melphalan (BEAM) has been successfully used as a conditioning regimen for stem cell transplantation. Different levels of dose-intensity for the etoposide and cytarabine components have been used in clinical trials. However, outcomes with the different doses used have not been directly compared. Our objective is to retrospectively determine the differences in outcomes with higher doses (high dose) versus lower doses (low dose) of etoposide and cytarabine in BEAM conditioning for Non-Hodgkin's Lymphoma patients undergoing autologous hematopoietic stem cell transplantation. □□Methods: Retrospective data from the institutions electronic record compared high-dose versus low-doses of BEAM conditioning. Patients treated with BEAM conditioning for autologous transplantation for Non-Hodgkins lymphoma from January 1st, 2007 to November 30th, 2012 were included. All patients were required to be treated with Carmustine 300mg/m2 once on Day -6 and Melphalan 140mg/m2 once on Day -1. Patients treated with a dose greater than 100mg/m2 of either cytarabine or etoposide were included in the high-dose group while those treated with 100mg/m2 for both cytarabine and etoposide were in the low-dose group. Both cytarabine and etoposide must have been given every 12 hours for a total of 8 doses from Day -5 to Day -2. □□Age, gender, body surface area, malignancy history and treatment, disease status at transplantation, baseline ECOG performance status was collected as demographic data Transplant data of cell dose, transfusion requirements, days of growth factor use, time to engraftment, length of stay, as well as toxicity data including mucositis, nausea/vomiting, diarrhea, neutropenic fever, hepatotoxicity, and cardiotoxicity were collected. The primary outcome of this study will evaluate complete and partial response rates. Secondary endpoints will include progression free survival, overall survival, treatment related mortality and other safety and efficacy outcomes.□□Results & Conclusions: Pending final analysis.

Learning Objectives:

List chemotherapeutic agents and doses used in the BEAM conditioning regimen

State the source of stem cells for autologous bone marrow transplantation

Self Assessment Questions:

Which of the following correctly lists all the cytotoxic agents used in the BEAM regimen?

A Busulfan, Etoposide, Adriamycin, Melphalan

B: Carmustine, Eribulin, Cytarabine, Mitomycin

C: Carmustine, Etoposide, Cytarabine, Melphalan

D: Bleomycin, Eribulin, Cyclophosphamide, Melphalan

Which of the following is a source of stem cells for autologous bone marrow transplantation?

A Fetal cord blood donor

B Peripheral host CD34 cells

C Peripheral sibling donor

D Aspirate matched unrelated donor

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-523 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHANGE IN HBA1C WITH DIPEPTIDYL PEPTIDASE-4 (DPP4) INHIBITORS IN A VETERAN POPULATION

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Background: Even after utilizing multiple anti-diabetic agents nearly half of all patients with diabetes do not achieve their HbA1c goal. Dipeptidyl peptidase-4 (DPP-IV) inhibitor is a relatively new class of an anti-diabetic medication. When compared to other oral anti-diabetic agents DPP-IV inhibitors are considered weight neutral and are not associated with significant hypoglycemia. Edward Hines, Jr. Veterans Affairs (VA) Hospital restricts the use of DPP-IV inhibitors. More information is needed to determine if DPP-IV inhibitors are efficacious in the veteran population. □□Purpose: The purpose of this study is to determine the change in HbA1c in patients who are approved for DPP-IV inhibitor use at 6 3 months. □□Methods: This study is a retrospective chart review at the Edward Hines, Jr. VA Hospital. The primary outcome of the study is to determine the change in HbA1c at 6 3 months after initiating therapy with a DPP-IV inhibitor. The secondary outcomes of the study include change in weight, percent of patients at goal (HbA1c <7%) from baseline to 6 3, 12 3, and 24 3 months and change in HbA1c from baseline to 12 3 and 24 3 months after initiating therapy. A list of all non-formulary requests for DPP-IV inhibitors between 2/2007 to 9/2012 will be generated. Subjects will be included if they were approved for use of a DPP-IV inhibitor and have an HbA1c within 6 3 months of starting a DPP-IV inhibitor. Data will be gathered from the computerized patient record system (CPRS) onto a collection sheet and then it will be transferred to a Microsoft Excel spreadsheet to be analyzed.
□□

Results/Conclusions: Data collection is in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe some of the limitations and advantages of using dipeptidyl peptidase-4 (DPP4) inhibitors.

Indicate the place in therapy for diabetes where DPP-IV inhibitors may be utilized.

Self Assessment Questions:

Which statement is most accurate?

A Dipeptidyl peptidase-4 (DPP4) inhibitors cause a glucose depende

B: DPP4 inhibitors lead to excessive weight gain when used as monc

C: None of the DPP4 inhibitors need to be renally dose adjusted

D: Post marketing reports do not associate DPP4 inhibitor use with p

Which of the following patient cases would it be most appropriate to star linagliptin 5 mg daily?

A A 49 year old male with an A1c of 9% (goal <7%) on metformin 10

B A 72 year old male with an A1c of 8.5% (goal <8%) on metformin

C A 66 year old female with an A1c of 9.3% (goal <7%) on insulin gl

D A 40 year old female with an A1c of 8.4% (goal <7%) on glipizide 2

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-520 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

NESIRITIDE FOR THE MANAGEMENT OF ACUTE DECOMPENSATED HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Nesiritide is a recombinant B-type natriuretic peptide with vasodilatory and natriuretic properties used for the rapid improvement of congestive symptoms in patients with heart failure exacerbation. To date nesiritide has almost exclusively been studied in patients with a reduced ejection fraction (EF) with conflicting results, and has ultimately led to a sharp decline in its use. However, there is a paucity of data regarding the use of nesiritide in patients with heart failure with a preserved EF (HFpEF).□The primary endpoint of this study is to evaluate whether the use of nesiritide has any impact on hospital length of stay in patients with HFpEF when compared to a case-matched retrospective cohort. Secondary endpoints include 30-day all-cause hospital readmission, in-hospital mortality, incidence of hypotension and renal dysfunction.□□This is a retrospective chart review from June 30, 2007 t June 30, 2012, comparing the effect of nesiritide use in patients with HFpEF to those patients with HFpEF in which nesiritide was not utilized. Patients will be included if they are between 18 and 89 years of age with a diagnosis of acute diastolic heart failure, chronic diastolic heart failure, or acute on chronic diastolic heart failure identified by International Classifications of Diseases, ninth edition codes. Patients will be excluded if they have an EF <40%, a history of heart transplant, or have undergone cardiothoracic surgery in the proceeding 30 days. Patients receiving nesiritide will be case matched based age, gender, and history of hypertension to those patients that did not receive nesiritide. □□For continuous data, a Students t-test or the corresponding non-parametric test will be utilized, where appropriate. For categorical data, a Fisher's exact test or Chi-square test will be utilized, where appropriate. □□The Institutional Review Board has approved this study. Data Collection is ongoing. Results will be presented

Learning Objectives:

Describe the rationale for the use of nesiritide in patients with heart failure with a preserved ejection fraction

Identify the potential adverse effects that may limit the use of nesiritide in the management of acute decompensated heart failure

Self Assessment Questions:

Which of the following appropriately describes the mechanism of action of nesiritide?

A Increases nitric oxide leading to vasodilation and a reduction in lef
B: Increases nitric oxide leading to vasodilation and reduction in left v
C: It is a recombinant B-type natriuretic peptide with vasodilatory prop
D: It enhances diuresis via inhibition of sodium and hydrogen ion reat

Which of the following is a side effect of nesiritide?

A Hyperkalemia
B Hyponatremia
C Contraction alkalosis
D Hypotension

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-521 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USING ACTIVE METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) SURVEILLANCE NASAL SWABS TO PREDICT CLINICAL RESPIRATORY CULTURES AT THE CINCINNATI VETERANS AFFAIRS MEDICAL CENTER

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Purpose: □The specific aim of the project is to determine if active MRSA surveillance nasal swabs can be used to predict clinical respiratory cultures at the Cincinnati Veterans Affairs Medical Center. The secondary goal is to determine the potential impact this information could have on MRSA-directed duration of therapy.□□Methods:□This is a retrospective chart review descriptive analysis study at the Cincinnati VAMC. Patients will be included if greater than or equal to 18 years old, admitted to the hospital between June 2011 and June 2012 in which a respiratory culture and an active MRSA surveillance nasal swab were obtained. Patients will be excluded if they did not have MRSA nasal swabs within 48 hours of the culture. It is estimated a 12 month chart review, about 360 final respiratory cultures, will need to be assessed. Respiratory cultures included will be sputum and bronchial. The included cultures will be matched to nasal MRSA swabs to identify those cultures that were obtained within 48 hours before or after a nasal surveillance swab. Patients with a positive MRSA respiratory culture and a positive MRSA surveillance swab will be considered true positive. Patients with a positive MRSA respiratory culture and a negative MRSA surveillance swab will be considered false negative. Patients with a negative respiratory culture and a negative MRSA surveillance swab will be considered true negative. Patients with a negative respiratory culture and a positive MRSA surveillance swab will be considered a false positive. From this information, the primary outcomes of sensitivity, specificity, positive and negative predicted values will be calculated based on standard statistics. Secondary outcomes include determining percent of patients treated with vancomycin or linezolid for pneumonia, duration of therapy, intubated vs. non-intubated patients, and ICU vs. non-ICU patients.□□Results and conclusions: □To be presented

Learning Objectives:

Describe potential benefits from the ability to predict MRSA positive respiratory cultures from nasal swab surveillance.

Define negative predictive value and positive predictive value.

Self Assessment Questions:

Which of the following most accurately describes the potential benefits from the ability to predict MRSA positive respiratory cultures based on nasal swab surveillance?

A It may help to streamline MRSA-directed antibiotic therapy.
B: It may help to determine the source of MRSA infection sooner.
C: It may help to diagnosis respiratory infections sooner.
D: It may help to streamline prophylactic antibiotic therapy.

Which of the following correctly defines positive and negative predictive values?

A Positive predictive value is the estimated numerical value used to
B Positive predictive value is the estimated numerical value used to
C Positive predictive value is the estimated numerical value used to
D Positive predictive value is the estimated numerical value used to

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-522 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY INVOLVEMENT IN EFFECTIVE TRANSITIONS OF CARE

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Purpose□The Accountable Care Act and changes in the national healthcare system are exerting pressure on health systems to improve measurable clinical outcomes. The goal of this project is to realign a hospital pharmacy practice model to transcend the care environment and provide pharmacy service to patients during the transitions of care t improve patient outcomes and decrease 30 day readmission rates.□□Methods□This is a descriptive report of a pharmacy practice model initiative that required rapid initiation with an administrative mandate. The project proceeded with quick, continuous, step-wise changes with collaboration from stakeholders. The plan includes pharmacists, pharmacy students and technicians working together to obtain medication histories and complete medication reconciliation at admission, with follow-up home medication reconciliation by phone. In addition, two pharmacist positions were realigned and an advanced pharmacy practice experience for P4 students was designed. Implementation included significant education starting with continuing education programs and culminating in one-on-one and group training. Following full initiation and institutional review board approval, the following data will be collected for analysis: age, sex, total number of medications per patient, time spent per patient, percentage of patients screened, called and participating in the post-discharge phone appointment, number, type and severity of drug related problems (DRPs and non-DRPs, number and type of accepted interventions, annual net savings and 30-day readmissions compared to matched patients who did not receive the pharmacy service. DRPs will be identified and categorized based on severity and the Pharmacist Care Network Europe (PCNE) classification for DRPs and their adherence assessed using the Morisky Compliance Scale.□□Results□Post-implementation data collection is planned.□□Conclusion□Implementation of a new pharmacy practice model requires evaluation of resources, involvement of stakeholders in practice change, department wide education, buy in and motivation from key personnel involved.

Learning Objectives:

Define transitions of care and examples of pharmacy roles in the transitions of care.

Describe the educational programs needed to support a practice change model to create a pharmacy role to improve transitions of care.

Self Assessment Questions:

The most complete transitions of care model involves a(n)

A Pharmacist provided medication reconciliation at each health care
B: Team based approach to coordinated care upon movement of pati
C: Effort to coordinate complete documentation at each health care s
D: Providing all prescriptions to patients when they are discharged fro

At what points in the transitions of care can a pharmacists intervention change a patients outcome?

A Admission and discharge medication reconciliation
B Outpatient phone appointment follow-up
C Anticoagulation and pharmacokinetic clinical dosing
D A and B

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-739 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF DIABETIC FOOT INFECTIONS IN PATIENTS RECEIVING OUTPATIENT PARENTERAL ANTIMICROBIAL THERAP

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The multiple complications of diabetes mellitus are a continual challenge for medical professionals, leading to frequent re-hospitalizations, decreased quality of life, and increased health care costs of an estimated $500 million annually. Of these complications, diabetic foot infections (DFI) are the most common reason for diabetes-related hospitalization and lower extremity amputation. The purpose of this study is to evaluate the appropriate management and treatment outcomes of patients with DFI with or without osteomyelitis receiving outpatient parenteral antimicrobial therapy (OPAT) through the Wishard Health Services (WHS) OPAT program in Indianapolis, IN.□□Patients with DFI being treated with OPAT between January 1, 2011 and June 30, 2012 were included in the analysis. Patients were excluded if they were < 18 years of age, pregnant, incarcerated, did not require parenteral antimicrobial therapy as part of their DFI treatment, received their entire antimicrobial course as an inpatient, or if their infection involved hardware or a stump from a prior amputation. The following data were collected through the review of electronic and OPAT clinic medical records for each patient: demographic information, risk factors for DFI, wound classification, procedures performed, consult services during hospitalization, microbiology, antimicrobial treatment, wound care offloading, and clinical outcome. Descriptive statistics were used to analyze the data both during the patients inpatient and OPAT treatment and six months post-treatment. The primary outcome measure was to evaluate the percentage of patients who received appropriate management of their DFI in accordance with the main recommendations of the updated 2012 Infectious Diseases Society of America (IDSA) guidelines for DFI, and to determine endpoints that correlated between treatment success or failure at 6 months. During the study period, 326 patients received OPAT services, of which 70 were diagnosed with a DF with or without osteomyelitis, and 56 patients met all inclusion criteria. Data analysis is ongoing.

Learning Objectives:

Describe the current treatment guidelines for the management of patients with diabetic foot infections, with specific emphasis on the comprehensive approach to treatment due to the complexity of the disease state.

Explain Wishard Health Services compliance with the current treatment guidelines when managing patients with DFI.

Self Assessment Questions:

1.Which of the following is a recommendation in the 2012 Infectious Diseases Society of America guidelines for DFI?

A Wound classification on admission
B: Oral antibiotics for all severe infections
C: Amputation as first-line treatment for all DFI
D: Wound care and offloading is discouraged

Due to the complexity of DFI, which of the following statements is correct?

A Patients with DFI have positive outcomes, and treatment failure ra
B Management of DFI requires a comprehensive approach including
C In DFI, if appropriate antimicrobial therapy is chosen based on cul
D All DFI will eventually lead to clinical failure, DFI recurrence, or am

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-524 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST-LED MEDICATION ROUNDS TO IMPROVE HCAHPS SCORES

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Background□Many hospitals are challenged by the Affordable Care Act of 2010 to improve patient satisfaction. Our institution has had to create innovative ways to improve its Hospital Consumer Assessment of Healthcare Providers and Systems (HCAPHS) scores and prevent a loss in CMS reimbursement. Attempts to improve patient satisfaction relating to the domain, Communication About Medicines (i.e. pharmacist meet and greet, medication information cards, and pharmacist-led discharge counseling) have been inconsistent and provided a non-sustainable impact.□□Purpose□The hypothesis of this study is that increasing pharmacist-led patient counseling regarding new medications, closer to the time of order/administration, would result in increased HCAHPS - Communication About Medicines scores.□□Methods □A pharmacist-led initiative was implemented on a medical progressive unit to improve the HCAHPS score relating to the Communication About Medicines domain. Patients who received an automatic therapeutic interchange (i.e. formulary substitution), an order for a new maintenance medication (e.g. antihypertensive agent, oral steroid, and antidepressant), an antimicrobial, and/or an anticoagulant/antiplatelet were identified to receive counseling by a pharmacist. The pharmacist was instructed to provide counseling to the identified patient within 24 hours regarding the indication and potential side effects associated with the medication(s) ordered. To increase the number of patients counseled by a pharmacist, several process improvement activities were held to identify obstacles relating to the pharmacists workflow (e.g. distractors, coordination with nursing, improvement in technician utilization). The number of patients identified for counseling, those that received counseling and the number of medications addressed were recorded. Patient satisfaction data regarding the Communication About Medicines (i.e. overall communication, indications, and side effects) were tracked from our institutions monthly HCAHPS scoring report. A determination of correlation or significance between variables was made using regressior analysis□□Results□To be determined□□Conclusion□To be determinec

Learning Objectives:

Describe the impact patient satisfaction now has on CMS reimbursement under the Affordable Care Act of 2010

Define the Kaizen management philosophy

Self Assessment Questions:

Beginning in October 2012, what percentage of the value-based purchasing bonus in Medicare reimbursement is tied to the patients perception of an institutions quality of care?

A 1%
B: 30%
C: 50%
D: 70%

Which of the following best defines the Kaizen management philosophy?

A A focus on continuous integral improvement in processes, utilized
B A strive toward a burst of high activity and massive changes in stru
C Continuous efforts to achieve stable and predictable process resul
D Expenditure of resources for any goal other than the creation of va

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-740 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST-REVIEWED ELECTRONIC DISCHARGE INSTRUCTIONS ON 30 DAY READMISSION RATES

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Purpose:□Drug-related problems, including medication errors, adverse drug events, and non-optimized medication regimens are potential sources for patient harm and hospital readmissions. During points of transition in patient care, including hospital discharge, the risk for these events to occur are particularly common. Pharmacists can reduce medication errors and improve patient adherence during this point of transition through counseling patients on their medication therapies and reviewing and resolving any errors or discrepancies with the discharge plan. Recently, a new pharmacy alert went into effect at Indiana University Health - Methodist Hospital notifying pharmacists when a discharge order has been entered for a patient. Pharmacists may then review the electronic discharge instructions (eDI) of these patients to resolve potential medication errors prior to discharge, and if possible, provide patient education regarding new medications or changes in previous therapies. The primary objective of this study is to evaluate the impact of pharmacist-reviewed electronic discharge instructions on 30 day hospital readmission rates.□□Methods:□A retrospective chart review will be conducted on patients who have been discharged from Indiana University Health - Methodist Hospital medicine floors between August 1, 2012 and October 31, 2012. Two groups of patients will be evaluated and compared: patients whose eDI was reviewed by a pharmacist prior to discharge and patients whose eDI was not reviewed by a pharmacist. 50 subjects will be randomly selected for inclusion into the study data for each group. □□Results and Conclusions:□To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Recognize the impact of pharmacist interventions in hospital discharge on patient health outcomes

Describe the implications of excess hospital readmissions on hospital reimbursement

Self Assessment Questions:

Previous studies have demonstrated that pharmacist involvement in the discharge process can lead to:

A increased rehospitalization
B: decreased adherence to medications
C: decrease in preventable adverse drug events
D: decreased patient medication knowledge

The Hospital Readmissions Reduction Program, a new Medicare program:

A does not penalize hospitals with excess 30 day readmission rates
B will not impact hospitals until 2015
C exempts hospitals from reimbursement penalties if they serve larg
D penalizes hospitals by reducing reimbursement rates for excess 3

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-741 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A BASAL-BOLUS INSULIN PROTOCOL FOR CONTINUED DOSING EFFICACY AND SAFETY OPTIMIZATION IN NON-CRITICALLY ILL PATIENTS

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Purpose: The American Diabetes Association, American Association of Clinical Endocrinologists, and American College of Endocrinology support the standardized use of a basal-bolus insulin (BBI) regimen in the institutional setting for glycemic control in non-critically ill patients. The objective of this study was to evaluate the efficacy and safety of the current institutional BBI protocol at achieving normal blood glucose (BG) levels (70-180 mg/dL) in patients having increased risk for insufficient control of hyperglycemia (RICH). RICH criteria was developed from literature review of hospitalized and non-hospitalized patients.□Methods The health systems electronic medical record was used to identify patients placed on the BBI protocol from 5/1/12 to 9/30/12. Identified patients were placed into RICH and non-RICH categories. Patients categorized as RICH met one or more of the following criteria: (1) body mass index greater than or equal to 30 kg/m2, (2) on the BBI protocols maximum total-daily insulin dosing for patients with a history of diabetes mellitus (0.4 units/kg/day), or (3) study-floor admission BG of 201-400 mg/dL. Exclusion criteria from the RICH group included patients whose home insulin total-daily dose was used for insulin dosing, had a glomerular filtration rate less than 60 mL/min, or were 65 years old or greater. Patients on the BBI protocol meeting any exclusion criteria or no inclusion criteria for the RICH group were placed into the non-RICH group. No patient less than 18 years old was included. Comparative outcomes between the two groups include the percent of BG levels between 70 mg/dL and 180 mg/dL, percent of BG levels above 180 mg/dL, percent of BG levels below 70 mg/dL, average BG level over the length of stay, average admission BG level, average discharge BG level and average change in BG levels from admission to discharge.
□

Results/Conclusion: To be presented at Great Lakes Residency Conference.

Learning Objectives:

Describe the complications associated with hyperglycemia in hospitalized patients.

Review a basal-bolus insulin regimen for appropriateness based on patient specific information.

Self Assessment Questions:

Surgical diabetic patients with one or more blood glucose level greater than 220 mg/dL on post-operative day one are at _____ times increased risk for developing a nosocomial infection than those wi

A 1.2
B: 1.9
C: 2.7
D: 3.9

In an 80 year old female diabetic patient with stage III kidney disease and no history of insulin use, which of the following is the best reason to use a reduced dosing calculation for her basal-bolus

A The patient is female
B The patient is elderly
C The patient has stage III kidney disease
D The patient is elderly and has stage III kidney disease

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-525 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADMISSION MEDICATION RECONCILIATION: UTILIZING PHARMACY STUDENTS

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Purpose: □□Medication reconciliation completed at hospital admission is often inaccurate and can lead to medication errors and adverse patient outcomes. Such medication errors include, but are not limited to, medication omissions and duplications; selection of wrong medications, dosage forms, doses, routes, and/or frequencies; and continuation of a previously discontinued medication. Data suggest that pharmacists perform medication reconciliation more accurately compared to other healthcare providers. However, due to labor costs, pharmacists are often underutilized. Some institutions utilize advance pharmacy practice experience (APPE) students to assist with medication reconciliation. Through this process, students also gain experience and contribute to patient care. The current process for obtaining admission medication histories within the health system is the responsibility of nurses and physicians. The purpose of this project is to pilot a quality improvement program utilizing APPE students to perform admission medication reconciliation. □□Methods:□□APPE students with a rotation at either two community health-system hospitals from November 19, 2012 through February 21, 2013 will complete admission medication reconciliation training during orientation. The students will obtain medication histories within 24 hours of a patients admission. Each student will complete at least two admission medication histories per working day. Students will document the medication history on a standardized form. This form will be reviewed by a pharmacist and discrepancies will be reconciled in the electronic health record (EHR). Finally, a note will be written in the EHR to document the reconciliation and interventions made. The program will be evaluated by assessing numbers of discrepancies and interventions found compared with the current practice.□□Results/Conclusion:□□Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the general process for medication reconciliation and explain how pharmacy students may be utilized

Describe the difference between a discrepancy and an intervention and list ways to verify medication history accuracy

Self Assessment Questions:

Which of the following can be utilized to verify accuracy of medication history information?

A caregiver
B: pharmacy
C: physician office
D: All of the above

All of the following would be considered interventions, except:

A Updating the allergy list to include a reaction
B Contacting the provider to discontinue a medication the patient is r
C Changing a medication dose in the prior to admission list of the EH
D Recommending a provider order an inpatient medication that was

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-840 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PROSPECTIVE PHARMACIST EVALUATION OF INTRAVENOUS IODINATED CONTRAST ORDERS ON THE INCIDENCE OF CONTRAST INDUCED NEPHROPATHY IN HIGH-RISK PATIENTS

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Background Contrast induced nephropathy (CIN) is associated with significant morbidity and mortality. CIN is defined as either a 25% or 0.5mg/dL increase in serum creatinine from baseline and typically occurs within 48-72 hours after the administration of iodinated contrast. Although classified as a medication, contrast is one of the few agents that continue to be administered to patients without pharmacist evaluation. When comparing hospitalized patients undergoing radiologic procedures, those who develop CIN typically have worse outcomes, increased costs, increased length of stay and are at greater risk of of medication toxicity and adverse drug reactions. An evidence-based guideline was developed at our institution to assist clinicians in preventing CIN. This guideline stratifies patients according to their risk o developing CIN and recommends hydration for those that are moderate to high risk. Purpose The goal of this project is to utilize the expertise of a pharmacist to evaluate hospitalized patients that are at increased risk for developing CIN. We propose that this will reduce the incidence of contrast induced nephropathy, improve guideline adherence and improve regulatory compliance. Methods The electronic medical record will be utilized to identify patients that are at increased risk for developing CIN. Pharmacists will review the patients medication profile, evaluate renal function and recommend hydration in accordance with the institutional guideline. They will also proactively hold or adjust nephrotoxic medications and continue to monitor renal function after the procedure. Study outcome measures include pre and post incidence of CIN, guideline adherence, outcomes of patients who did not receive an intervention and the number of documented pharmacist interventions. Results/Conclusion This study is ongoing.

Learning Objectives:

Review contrast induced nephropathy and potential risk factors

Discuss the role of the pharmacist in reducing contrast induced nephropathy

Self Assessment Questions:

How is contrast induced nephropathy defined?

A 25 % increase in serum creatinine from baseline

B: 0.5 mg/dl increase in serum creatinine from baseline

C: 1 mg/dl increase in serum creatinine from baseline

D: Both A and B

What is an evidence based strategy to reduce the risk of contrast induced nephropathy in high risk patients?

A Restrict fluid intake

B Maintain blood pressure less than 100/60

C Administer intravenous hydration

D Administer ibuprofen one hour prior to procedure

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-841 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE PHARMACOECONOMIC IMPACT OF TBO-FILGRASTIM USE AT AN ACADEMIC MEDICAL CENTER

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PURPOSE Filgrastim, analogue of human granulocyte colony-stimulating hormone produced through recombinant DNA technology, is approved to prevent febrile neutropenia in adult and pediatric cancer patients receiving chemotherapy, for patients undergoing stem cell collection, and patients with severe chronic neutropenia. The University of Wisconsin Hospitals and Clinics (UWHC) expenditures for filgrastim are predicted to increase by 20% for the current budget year, despite the removal of filgrastim from approximately 50% of the autologous stem cell transplants performed at UWHC. The approval of tbo-filgrastim by the FDA allows for price competition and potential cost reductions. The purpose of this project was to analyze the current inpatient filgrastim utilization, to update the UWHC filgrastim guideline with this information, and to evaluate the cost savings impact of using tbo-filgrastim at UWHC. METHODS A medication use evaluation (MUE) of filgrastim was performed to audit the appropriateness of current inpatient prescribing practices at UWHC. For each dose, the admitting service, admitting diagnosis, indication for filgrastim use, initial absolute neutrophil count (ANC) prior to filgrastim administration, final treatment ANC, number of days ANC is above 500, total daily dose of filgrastim, patient weight, total number of doses, and authorizing provider was collected. Based on a thorough literature search and the results of the MUE, the UWCH guideline for the use of filgrastim was updated to reflect the most current data. The appropriateness of inpatient tbo-filgrastim use was determined based off appropriate inpatient filgrastim use per the updated guideline, and the estimated doses and cost of tbo-filgrastim that would be administered in place of filgrastim for future use was established. Finally, a plan for the implementation of using tbo-filgrastim, including obtaining prescriber consensus and determining the method to move a "biosimilar" through appropriate committees at UWHC was developed. RESULTS AND CONCLUSIONS Final results and conclusions will be presented.

Learning Objectives:

Identify appropriate use of filgrastim.

Discuss the benefits and barriers to the approval and use of biosimilar products.

Self Assessment Questions:

Which of the following is an appropriate indication for the use of filgrastim?

A The treatment of febrile neutropenia in patients receiving chemoth

B: To assist in engraftment for patients undergoing an allogeneic hen

C: For the treatment of severe bone pain in patients with malignancy

D: The prevention of febrile neutropenia in patients receiving chemoth

Which of the following is matched appropriately regarding the approval and use of biosimilar products?

A Benefit: allows for market competition and a potential cost savings

B Barrier: well developed legislation for biosimilar approval in the US

C Benefit: comprised of small molecules that allow for easy replicatio

D Barrier: biosimilar approval legislation has not been developed in c

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-742 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF PHARMACIST DISCHARGE COUNSELING AND MEDICATION RECONCILIATION ON READMISSION RATES FOR PATIENTS WITH PNEUMONIA

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Purpose: Medication reconciliation is an integral part of patient care, promoting the appropriate use of medications across transitions of care. The Joint Commission has included medication reconciliation as a National Patient Safety Goal since 2005. Numerous studies demonstrate that pharmacists positively impact patient safety by taking an active role in the medication reconciliation process. Pharmacist-led medication review upon discharge has been shown to reduce emergency department and physician visits, medication errors, and overall healthcare costs. At Ministry Saint Josephs Hospital (MSJH), pharmacists roles are currently limited to the transcription phase of admission reconciliation and medication profile review for select patient populations. The primary objective of this project is to demonstrate the impact of a pharmacist-led discharge medication reconciliation program on readmission rates for patients with pneumonia at a 500+ bed tertiary care center. Secondary objectives include clinical impact as defined by pharmacist interventions and assessment of pharmacist resources required. Methods: A baseline retrospective review was completed for patients readmitted to MSJH within 30 days following an admission under the Diagnosis Related Groups (DRGs) 480-486 from January to March 2012. Patients were excluded if admitted for observation or readmitted to an unaffiliated hospital where records were not available for review. A pilot program has been implemented during which a pharmacist provides discharge medication education and reconciliation as well as follow-up phone calls for patients diagnosed with pneumonia. Interventions and resources required are documented upon completion. Thirty-day all-cause readmission rates will be reviewed and compared to baseline data. Preliminary Results: At MSJH, the goal for all-cause readmission rates is to be in the 90th percentile (10.8%). Between January and March 2012, the readmission rate was 19.2 percent. In baseline review, readmission diagnoses were variable, with pneumonia accounting for approximately 15 percent. Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review new readmission measures and repayment adjustments under the Centers for Medicare and Medicaid Services Hospital Readmissions Reduction Program

Discuss possible barriers of the implementation of a pharmacist-led discharge medication education and reconciliation program

Self Assessment Questions:

Which of the following patient populations is not currently subject to new readmission measures under the Centers for Medicare and Medicaid Services Hospital Readmissions Reduction Program?

A Asthma/COPD

B: Pneumonia

C: Chf

D: Acute MI

Which of the following does not represent a barrier to pharmacist involvement in discharge medication education and reconciliation at Ministry Saint Josephs Hospital?

A Resources required

B Identification of patient population

C Interdisciplinary participation and communication

D Resistance from patients

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-842 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A SHORTENED COURSE OF ORAL NIMODIPINE AFTER SUBARACHNOID HEMORRHAGE IN A NEUROSCIENCE INTENSIVE CARE UNIT

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Purpose: Nimodipine is a calcium channel blocker that is used to decrease delayed ischemic neurologic deficits in patients who have suffered aneurysmal subarachnoid hemorrhage (aSAH). In clinical trials nimodipine has not consistently decreased angiographic vasospasms; however, it has improved neurologic outcomes after aSAH. The dosing according to the package insert states that a course of oral nimodipine is 60 mg every 4 hours for 21 days. The FDA approved this based upon 4 phase III clinical trials. The duration of nimodipine treatment that was studied in three of the four trials was 21 days. Shortened courses of nimodipine have not been fully evaluated in patients with aSAH. The primary objective of this study is to provide evidence that a shortened course of nimodipine is not inferior to the course of therapy that has shown benefit in historical trials. Methods: This study was approved by the University of Cincinnati IRB. This study will be a retrospective, single center chart review that includes patients admitted to the University of Cincinnati Medical Center (UCMC) neurosurgical ICU with aSAH and received at least one dose of nimodipine. Patients with aSAH at UCMC generally receive a shortened course of nimodipine therapy, up to 14 days. The patients that received shortened courses of nimodipine at UCMC will be compared to historical controls from the studies that used nimodipine 60 mg orally every 4 hours for 21 days as the intervention. Patients will be evaluated in order to quantify the incidence of delayed cerebral ischemia, Glasgow Coma Scale at discharge, modified Rankin Score at discharge and follow up, Glasgow Outcome Scale at discharge and follow up, in-hospital compliance, vasospasm detected by transcranial doppler or angiography and adverse effects of the medication. Results: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

State the FDA approved dosing for oral nimodipine in patients with aneurysmal subarachnoid hemorrhage.

Identify therapies that have been studied in aneurysmal subarachnoid hemorrhage patients for the prevention of vasospasms and delayed ischemic neurologic deficits to improve outcomes.

Self Assessment Questions:

The FDA approved length of therapy for nimodipine after an aneurysmal subarachnoid hemorrhage is?

A 7 days

B: 14 days

C: 18 days

D: 21 days

The most common location of aneurysmal rupture is?

A Middle cerebral artery

B Anterior communication artery

C Posterior communication artery

D Other

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-526 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HOW PREPARED ARE PHARMACY RESIDENTS FOR THE EMOTIONAL CHALLENGES OF PATIENT CARE

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Purpose:□Training within pharmacy residency programs across the nation generally exposes residents to a variety of situations that can be emotionally unsettling, such as cardio-pulmonary resuscitation or pediatric deaths. Research suggests that preparing practitioners for emotionally unsettling situations may help prevent acute and long-term effects, such as burn-out or secondary post-traumatic stress disorder. The level of training for these events within pharmacy residency programs is currently unknown. The purpose of this study was to assess residents exposure to and perceptions of emotionally unsettling events. Additionally, we evaluated the extent to which pharmacy residency programs are preparing trainees to cope with these unsettling situations, as well as the methods of preparation if applicable. □□Methods:□A survey instrument was developed, pre-tested and distributed to residency program directors as well as postgraduate year one and two (PGY1 and PGY2) residents via the ASHP program director list-serv. The survey asked both program directors and residents about the types of experiences residents encountered during the training, and how much preparation was provided by the program for handling emotionally unsettling situations. The analysis involved descriptive statistics within each group surveyed, as well as a comparison between the perspectives of program directors and those of residents.□□Results/Conclusion:□Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Discuss the collection, analysis, final results and conclusions of surveys on the emotional preparedness of pharmacy residents.

Identify potential benefits of preparing first and second year residents to cope with emotionally unsettling events they might encounter throughout their careers as pharmacists.

Self Assessment Questions:

One potential benefit to preparing residents for emotionally unsettling events they might encounter is:

A It will cause them to leave your training program

B: It will allow them to learn that pharmacy is too difficult and resign

C: It may prevent short- and long-term burnout

D: It may cause them to stop empathizing with their patients

One characteristic that may put residents at emotional risk is:

A Their ability to compartmentalize

B Their ability to empathize

C Their ability to ignore patient issues

D Their ability to cope with loss of patient life

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-843 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACIST-MANAGED TRAVEL VACCINATION CLINIC IN AN INDEPENDENT COMMUNITY PHARMACY

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Purpose:□To be a patient resource by providing vaccinations and educational information in order to reduce the risk of illness during international travel. The primary objective of this project is to improve travelers access to immunization and educational services by implementing a pharmacist-managed travel vaccination clinic at an independent retail pharmacy associated with a hospital network.□Background: □International travel rates have been on the rise with Americans making more than 61 million trips with at least one night spent outside the United States in 2009. 22%-65% of travelers to the developing world report travel-related health problems. Vaccinations and non-pharmacologic interventions can help prevent many travel-related illnesses. Pharmacists are a valuable healthcare resource because they can identify candidates for immunization, administer recommended vaccinations pursuant to a protocol or a written prescription, and educate patients about non-pharmacologic strategies to prevent illness during international travel. □Methods:□Prior to implementation, we submitted a formal travel immunization clinic proposal for approval by senior leadership. Once approved, we selected one of five independent retail pharmacy locations within our hospital network to be the pilot location. We then requested the participation of APhA-certified immunizing pharmacists at that location. Informational resources on common travel vaccinations and non-pharmacologic interventions were developed to assist participating clinic pharmacists in making recommendations to patients. Future plans for the project include establishing clinic hours, marketing our services, and establishing a collaborative practice agreement for the yellow fever vaccine.□Results/Conclusion:□The implementation phase of this projec is ongoing and the results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify common vaccinations that are recommended and/or required fo international travel.

Locate resources to obtain information about health concerns associate with international travel.

Self Assessment Questions:

Which of the following vaccinations is regulated by International Health Regulations and may only be administered by authorized providers?

A Hepatitis A

B: Yellow Fever

C: Hepatitis B

D: Japanese Encephalitis

Which of the following resources is published by the CDC to provide information about health risks associated with international travel?

A “Orange Book”

B Morbidity and Mortality Weekly Report (MMWR)

C “Yellow Book”

D International Travel and Health

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-743 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREVALENCE OF DEPRESSION AND ANTIDEPRESSANT THERAPY USE IN A PEDIATRIC CYSTIC FIBROSIS POPULATION

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Introduction: Depression has been associated with significant morbidity and mortality in children and adolescents. Patients with symptoms of depression are at risk for medication non-adherence, higher rates of missed healthcare appointments, and lower health-related quality of life. In the United States, cystic fibrosis (CF) is the second most common inherited disorder occurring in childhood. Reports of depression in pediatric CF patients have increased in recent years with depression prevalence rates estimated as high as 25%. As awareness of depression in pediatric CF patients increase, there remains limited data regarding the optimal treatment of depression in this patient population.□□Purpose: To assess the prevalence of depression, describe depression treatment regimens, and identify risk factors for depression in the pediatric CF population at a single care center.
□□
Methods: A retrospective chart review was conducted and included patients age six to 18 years old with an active CF diagnosis who received primary CF care from Riley Hospital for Children at Indiana University Health between November 2011 and November 2012. Information was collected from the chart including age, gender, race, weight, body mass index percentile (based on age and gender), age of CF diagnosis, number of hospitalizations in past 12 months, number of CF exacerbations requiring hospitalization or outpatient management in past 12 months, lung function assessment, and co-morbid conditions. If there was a diagnosis of depression, antidepressant therapy and/or psychotherapy were recorded.□□Results/Conclusion: Data collection and analysis are in progress and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Report the rate of depression in pediatric cystic fibrosis patients at one accredited CF center compared to reported national rates.

Identify antidepressant therapy used in pediatric CF patients and common risk factors associated with depression in this patient population.

Self Assessment Questions:

In the United States, prevalence of depression in the pediatric CF population has been estimated at:

A 0%
B: 3-5%
C: 10-15%
D: 50-60%

What is a first-line therapy option for treatment of depression in pediatric patients?

A Fluoxetine
B Risperidone
C Alprazolam
D Amitriptyline

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-527 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST EDUCATION AND POST-DISCHARGE FOLLOW-UP FOR REDUCING HEART FAILURE READMISSIONS

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Purpose: Data from 2008 estimate that 5.7 million Americans have heart failure. Nearly one in four patients hospitalized with heart failure are readmitted within 30 days of discharge. Despite healthcare providers taking steps to improve the discharge process, data have shown that the medication reconciliation process and overall patient understanding are poor. Pharmacist involvement has been shown to increase patient understanding of medications and prevent medication errors. This study assesses the impact of pharmacist education and follow-up phone calls on readmission rates for heart failure patients.□□Methods: This is a prospective, controlled trial evaluating pharmacist education of heart failure patients. Outcomes will be evaluated by comparing 30-day readmission rates of pharmacist-educated patients to patients without pharmacist education. Patients are eligible if they are admitted with heart failure exacerbation. Patients are excluded if they are pediatrics (age < 18), in labor/delivery/maternity units or intensive care units, have cognitive impairment preventing education, are residents of long-term care facilities, or do not give consent. A pharmacist will educate consenting patients and/or caregivers on heart failure with an emphasis on medications (indication, administration, side effects). The pharmacist will provide a personalized medication calendar, a heart failure education packet, and a medication organization container. A follow-up phone call will be made 1-2 weeks post-discharge for pharmacist-educated patients. During the call, the pharmacist will ask questions about medications, inquire about adherence, and answer any medication-related questions. Patient knowledge of medications, self-reported adherence, length of education sessions and phone calls, and pharmacist interventions will be described.□□Results: To date, 22 patients have been educated by a pharmacist and 13 have completed follow-up phone calls. The mean education time was 52 minutes, and the mean time spent on calls was 12 minutes.□□Conclusion: To be presented at the 2012 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of pharmacist involvement in direct care of patients with heart failure.

List the advantages of implementing the teach-back method during patient education.

Self Assessment Questions:

Which statement about the teach-back method is correct?

A Helps assess patient comprehension
B: Takes too much time
C: Promotes knowledge gaps
D: Is not endorsed by the National Quality Forum

Pharmacist participation in direct patient care leads to:

A Increased hospital readmissions
B Decreased medication errors
C Fragmented transitions of care
D More complex drug regimens

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-744 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST INITIATED PHONE COUNSELING PROGRAM OF PATIENTS TAKING ORAL CHEMOTHERAPY AGENTS

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Purpose: Since the introduction of oral chemotherapy, adherence to the medication remains a complex challenge. Several studies have shown low compliance rates with oral chemotherapy, ranging from 49 to 16%. Low compliance has shown to lead to reduced outcomes. Also, oral chemotherapy medications have a wide variety of adverse reactions that can be difficult to manage. The objective of the study is to evaluate the effectiveness of a newly initiated pharmacist-led counseling and compliance program for oral chemotherapy agents at the Zangmeister Center, an outpatient cancer center in Columbus, Ohio.□□Methods: A prospective, randomized, controlled analysis of adults taking oral chemotherapy medication(s). Patients were included if they were over 18 years of age and taking 1 of 8 commonly prescribed oral chemotherapy medications. Since October 2012, 47 participants were included in the study and randomly assigned to an intervention or a control group. The intervention group received a phone call from a pharmacist 7-15 days after refilling their prescription. Both groups were followed for three months. The intervention group and the control group completed a survey when returning for their prescription refills. The primary outcome was patient-reported compliance on the surveys. The secondary outcome was consistency of refill dates, adverse effects, and patient satisfaction. Other data collected was number of interventions per phone call and length of phone call. □□Results/ Conclusion: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Identify challenges that patients face when taking oral chemotherapy medications.

Discuss methods that pharmacists can utilize to improve oral chemotherapy compliance.

Self Assessment Questions:

Which of the following are challenges that patients face when taking oral chemotherapy medications?

A Regimen complexity
B: Medication cost
C: Managing side effects
D: All of the above

Which of the following are benefits to counseling patients about their oral chemotherapy?

A Increasing compliance
B Reducing side effects
C Helping to manage side effects
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-844 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANTIMICROBIAL USE ASSESSMENT IN SEVERE SEPSIS AND SEPTIC SHOCK

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PURPOSE: The administration of appropriate and timely empiric antimicrobials reduces mortality in septic patients. The purpose of this study is to assess time to administration, selection and dosing of empiric antimicrobials in severe sepsis and/or septic shock.□□METHODS: A retrospective cohort study of patients admitted with severe sepsis and/or septic shock was performed. Patients were identified via an electronic database and were excluded if they expired within 24 hours of diagnosis. The primary endpoints were time to initial antimicrobial administration and appropriateness of antimicrobials. Antimicrobials were deemed appropriate if they correlated with Infectious Diseases Society of America (IDSA) recommendations and were dosed correctly according to renal function as calculated by the Cockcroft-Gault equation. Secondary endpoints included hospital length of stay (LOS), intensive care unit (ICU) LOS and survival to hospital discharge.□□RESULTS: To date, the 142 patients reviewed had a mean age of 62 years and an APACHE II score of 17. The most prevalent infection source was the respiratory tract, which included 50 (35%) patients. The median time to initial antimicrobial administration was 47 (0-332) minutes, when patients who received antimicrobials before the onset of sepsis were excluded. Empiric antimicrobials were selected according to IDSA guidelines in 101 (71%) patients and dosed appropriately in 125 (88%) patients. The median hospital LOS was 8 (2-53) days, ICU LOS was 4 (1-38) days and survival rate was 81% (115 patients). Of note, hospital LOS and ICU LOS were not affected by IDSA recommended antimicrobials (p=0.074, 0.138), correct antimicrobial dosing (p=0.564, 0.388) or administration of antimicrobials within the first hour of sepsis diagnosis (p=0.405, 0.326).
□□
CONCLUSION: The median time to antimicrobial administration at our institution is within one hour of severe sepsis and/or septic shock diagnosis. Furthermore, antimicrobials are recommended by the IDSA and dosed appropriately in the majority of these patients.

Learning Objectives:

Describe the diagnostic criteria for sepsis, severe sepsis and septic shock.

Identify the antimicrobial administration goals in sepsis, severe sepsis and septic shock according to the Surviving Sepsis Campaign.

Self Assessment Questions:

Variables that are used to diagnose sepsis include:

A Heart rate greater than 90 beats per minute
B: Systolic blood pressure less than 110 mmHg
C: Greater than 10% bands
D: Both A and C

According to the Surviving Sepsis Campaign, empiric antimicrobials should be initiated within how many minutes of severe sepsis onset?

A Less than 30 minutes
B Less than 45 minutes
C Less than 60 minutes
D Less than 90 minutes

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-528 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREVENTING SURGICAL SITE INFECTIONS: EMPHASIS ON ANTIMICROBIAL PROPHYLAXIS AND DETECTION OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS NASAL CARRIERS

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Purpose Surgical site infections are one of the most common causes o nosocomial infections and are associated with higher readmission rates, extended length of stay, and increased healthcare costs. In an effort to reduce surgical site infections, recommendations in regards to preoperative, perioperative, and postoperative prevention measures have been published. The objective of this study is to evaluate the impact that standardized cefazolin weight based dosing, intraoperative cefazolin redosing, and identification and decolonization of MRSA nasal carriers has on reducing the incidence of surgical site infections. Methods All patients undergoing orthopedic, neurological or cardio-thoracic surgery who receive preoperative antimicrobial prophylaxis with cefazolin will be included in this study. Antimicrobial prophylaxis with cefazolin will be dosed according to the patients weight with 1 gram of cefazolin given to patients less than or equal to 80 kilograms and 2 grams given to patients greater than 80 kilograms. A second dose of antibiotics will be administered to all patients in which the duration of surgery is greater than 4 hours. Additionally, all cardio-thoracic patients undergoing coronary artery bypass graft surgery will receive MRSA nasal screening prior to surgery. For those patients determined to be positive MRSA nasal carriers, decolonization with chlorhexidine rinse and mupirocin ointment will occur and the preoperative prophylactic antibiotic will be switched to vancomycin. Using the institutions electronic health records, surgical site infections from previous months will be retrospectively reviewed to determine the impact the proposed interventions had on preventing surgical site infections. The pharmacy department, in conjunction with the infection control, anesthesia, and surgical teams will be involved in this study. All study methods were approved by the Institutional Review Board at Blanchard Valley Hospital. Results/Conclusion Data collection and analysis still in progress. Final results and conclusions to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss the current recommendations in regards to antimicrobial prophylaxis in surgical patients

Explain the role of preoperative MRSA nasal screening and decolonization as a strategy to reduce surgical site infection

Self Assessment Questions:

Intraoperative redosing of antibiotics is recommended in which of the following scenarios?

A All procedures lasting greater than 4 hours
B: Procedures that exceed 2 half-lives of the antimicrobial agent
C: High risk procedures such as coronary artery bypass surgery
D: Intraoperative redosing is not routinely recommended

In patients that are positive S. aureus nasal colonizers:

A The risk of a surgical site infection is comparable to non-colonizers
B Approximately 1 in 4 patients will develop a surgical site infection
C The risk of a surgical site infection increases by 2-14 fold
D Decolonization with mupirocin and chlorhexidine is unlikely benefic

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-745 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE COMPARISON OF BUPIVACAINE OR ROPIVACAINE COMBINED WITH FENTANYL FOR LABOR ANALGESIA

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Purpose: Bupivacaine and ropivacaine are used frequently for patient-controlled epidural analgesia (PCEA). These agents can be used with a variety of concentrations and in combination with other medications. At our institution, bupivacaine 0.0875% or ropivacaine 0.2% is combined with fentanyl 3mcg/mL. There is some evidence to suggest ropivacaine may be less potent than bupivacaine although many studies have compared these agents at the same concentrations with no difference. Nursing and anesthesia personnel anecdotally report ropivacaine to be superior in the late phase of cervical dilation, thus the purpose of this study was to compare pain scores between the two formulations to detect any difference and evaluate the plausibility of a single, optimally effective, cost efficacious combination as ropivacaine epidurals are about 10 times the cost of bupivacaine epidurals. Methodology: This single-center, retrospective, cohort study included patients who delivere between November 1st, 2012 and December 15th, 2012 at our institution. The health-systems electronic medical records were reviewed to collect data from patients receiving ropivacaine or bupivacaine with fentanyl for labor analgesia who met all inclusion criteria. Pain scores collected throughout delivery were compared to determine if differences could be found for the early phase of labor (up to 7 cm cervical dilation) and from 7 cm until delivery. In addition to pair scores, the total volume of drug administered throughout delivery was determined, based upon reported epidural waste, to compare the total dose given. Finally, a direct cost-comparison was completed for the study period by reviewing total cost associated with each formulation and epidural wastage. Results and Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Describe the benefits of patient controlled epidural analgesia (PCEA).

Discuss the theorized difference in potency between ropivacaine and bupivacaine.

Self Assessment Questions:

Which of the following is a benefit to patient controlled epidural analgesia (PCEA)?

A Patients are able to give as much medication as they choose with
B: Nursing staff no longer needs to document patient status in medic
C: Patients are given more involvement in pain control in a controlled
D: PCEAs can be given by multiple routes of administration when car

What is the reported difference in potency between epidurally administered ropivacaine and bupivacaine in studies researching the estimated 50% effective dose (ED50)?

A 20-30% difference
B 40-50% difference
C 60-70% difference
D 80-90% difference

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-529 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A TAILORED ANTIBIOGRAM FOR GRAM-NEGATIVE URINARY ISOLATES: IMPACT OF PRIOR RESIDENCE, AGE, ANTIMICROBIAL USE, RECENT HOSPITALIZATION, AND HOSPITAL UNIT ON SUSCEPTIBILITY

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Purpose: The emergence of antimicrobial resistance has a significant impact on patient morbidity and mortality. Increasing incidence of gram-negative infections leads to increased hospital costs and increased length of stay, poor patient outcomes, and requires careful antimicrobial selection. Using hospital-specific and local resistance patterns, traditional antibiograms guide clinicians towards appropriate empiric antimicrobial selection. Despite the aid of a traditional antibiogram, empiric antimicrobial selection does not always result in optimal therapy. The aim of this study is to develop a tailored antibiogram to better aid physicians in selecting more appropriate therapy for patients who present to Advocate Lutheran General Hospital (ALGH) with urinary tract infections based on specific patient factors.□□Methods: The tailored antibiogram will be developed by utilizing data from urinary isolates obtained from patients presenting to ALGH between January 1, 2012 and December 31, 2012. The tailored antibiogram will be specific to four common gram negative urinary pathogens: Klebsiella pneumoniae, Escherichia coli, Proteus mirabilis, and Pseudomonas aeruginosa. The susceptibilities of these organisms, in the tailored antibiogram will then be compared to susceptibilities for these same organisms from the standard antibiogram. The tailored antibiogram will be analyzed to determine how any of the following patient factors independently influence the susceptibilities: prior residence, age, systemic antimicrobial use in the previous 30 days, hospitalization in the previous 30 days, and hospital unit.□□Results/Conclusion: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Recognize limitations to a standard hospital antibiogram

Identify patient characteristics that have been shown to influence antimicrobial susceptibility

Self Assessment Questions:

Which of the following is considered to be a limitation of susceptibility data presented in a standard hospital antibiogram?

A Demonstrates antimicrobial resistance specific to an institution
B: Provides susceptibility variations within an antimicrobial
C: Displays antimicrobial susceptibility based on isolate location
D: Guides empiric selection of an antimicrobial

Which of the following patient characteristics has been shown to influence antimicrobial susceptibility?

A Age < 65 years old
B Patients presenting from a nursing home
C Prior antimicrobial exposure > 1 year
D Patients presenting from the community

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-530 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TREATMENT OF MIGRAINE IN THE EMERGENCY DEPARTMENT WITH PROCHLORPERAZINE, METOCLOPRAMIDE, OR LOW-DOSE DROPERIDOL

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Purpose: Dopamine antagonists are often used for the treatment of migraine in the emergency department (ED); however, recent medicatio shortages have impacted this medication class. The objective of this study is to compare the effectiveness of these medications as measurec by change in pain scores and length of stay in the ED. □□Methods: Adult patients treated with prochlorperazine, metoclopramide, or low-dose droperidol (defined at this institution as ≤ 1.25 mg within six hours) in the ED were retrospectively identified. Eligible patients presented to the Spectrum Health Butterworth ED with migraine in 2011-2012. Patients who were admitted to the observation unit or to an inpatient floor were excluded, as were patients who received more than one study medication, non-low-dose droperidol, or had insufficient pain score documentation. The primary objective was change in pain score (based on an 11-point Numeric Rating Scale) at 0.5-2 hours after medication administration. The secondary objective was length of stay in the ED. □□

Results: A total of 150 patients (50 prochlorperazine, 50 metoclopramide, and 50 droperidol) have been included to date. The mean decrease in pain score was 4.6 in the prochlorperazine group, 5.4 in the metoclopramide group, and 4.5 in the droperidol group. There were no differences in the change in pain score at 0.5-2 hours after medication administration (p-values > 0.05). Mean length of stay was 3.8 hours for prochlorperazine, 3.4 hours for metoclopramide, and 3.5 hours for droperidol (p-values > 0.05).□□Conclusion: When used to trea migraine there is no significant difference in pain score reduction or length of stay in the ED between prochlorperazine, metoclopramide, anc droperidol.

Learning Objectives:

Describe the theorized mechanism of action for dopamine antagonists ir the treatment of migraine.

Identify 2 possible side effects associated with use of droperidol.

Self Assessment Questions:

Which of following is a theorized effect dopamine antagonists have on migraines?

A Reduction in nausea through the chemoreceptor trigger zone
B: Reduction in nausea through gastric acid suppression
C: Pain relief through proliferation of mu-receptors
D: Reduction in photosensitivity through vasoconstriction of blood ves

Droperidol has a Boxed Warning for which of the following potential adverse reactions:

A Nausea
B Akathisia
C Nystagmus
D QT-prolongation

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-531 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IDENTIFYING BARRIERS TO OPTIMAL USE OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION

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Purpose□This study will evaluate the use of continuous subcutaneous insulin infusion (CSII) in the treatment of diabetes mellitus at the Robley Rex Veterans Affairs Medical Center. The purpose is to determine the factors that inhibit patients from using the available features of CSII and creating interventions aimed at increasing adherence to and optimizatior of the use of CSII, which may improve long-term blood glucose control.□□Methods□Data on patient behaviors and opinions will be collected by a patient questionnaire and responses will be evaluated to determine the rate of adherence to features of CSII and diabetes self-care behaviors and to identify possible barriers to adherence. Based on the rates of adherence and most common barriers, a patient educationa intervention will be designed and implemented. Three months after patient education, follow-up questionnaires will be completed and HgbA1C measurements analyzed to determine the effect of interventions.□Patients who meet the following criteria will be eligible for participation: Veteran participating in multidisciplinary diabetes management clinic or endocrine clinic, diagnosis of diabetes mellitus, and current treatment with CSII initiated at least six months prior to initia patient questionnaire. Patients that do not meet these criteria or who fai to attend more than one follow-up clinic appointment will be excluded.□The primary endpoints are: percentages of patients adhering to behaviors and possible barriers to adherence. Secondary endpoints include: percentages of patients adhering to behaviors three months after intervention and mean difference in HgbA1C measurements at baseline and 3 months after intervention.□□Results□Results of this study are currently pending. Preliminary results will be included in final presentation.□□Conclusions□Conclusions formed upon receipt of results will be included in the final presentation.□□The contents of this presentation do not represent the views of the Department of Veterans Affairs or the United States Government.

Learning Objectives:

Explain the different features that can optimize the use of continuous subcutaneous insulin infusion.

Discuss the common barriers that inhibit patients use of the features tha optimize the use of continuous subcutaneous insulin infusion.

Self Assessment Questions:

Patients treated with continuous subcutaneous insulin infusion, compared to those treated with multiple daily injections, have:

A lower HgbA1C levels

B: improved quality of life

C: reduced number of episodes of hypoglycemia

D: all of the above

Which of the following is one of the 7 essential self-care behaviors identified by the American Association of Diabetes Educators (AADE)?

A blood glucose monitoring

B taking medication consistently

C being active

D all of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-532 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

WEEKLY VERSUS DAILY DOSING OF AZITHROMYCIN FOR THE PREVENTION OF MYCOBACTERIUM AVIUM COMPLEX IN PATIENTS WITH ACQUIRED IMMUNODEFICIENCY SYNDROME

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Purpose: □Mycobacterium avium complex (MAC) is the most common cause of bacterial opportunistic infection in patients with acquired immunodeficiency syndrome (AIDS). Up to 40% of patients with AIDS who do not receive antimicrobial prophylaxis will be infected with MAC within the first two years of diagnosis. Guidelines published by the Centers for Disease Control and Prevention (CDC) recommend azithromycin 1200 mg weekly for MAC prophylaxis. However, mean serum levels are directly correlated with the incidence of gastrointestinal symptoms, often leading to the requirement of a lower dose or withdrawal. The objective of this study was to determine if azithromycin 250 mg daily was as effective as 1200 mg weekly for the primary prevention of MAC infection in patients with AIDS.□□Methods: □This was a retrospective, cohort study involving review of patient charts from the University of Louisville Health Care HIV Clinic. A computer-generated report was utilized to identify adult patients who received weekly and daily azithromycin therapy for primary prophylaxis of MAC infection. The primary endpoint was the incidence of MAC infection, determined by performing a chart review of medications and diagnosis o MAC infection. Patients who were started on a treatment regimen for MAC disease were classified as meeting the primary outcome. The secondary endpoint was the percentage of prescribers who appropriatel initiated MAC prophylaxis according to the CDC guidelines. Exclusion criteria consisted of patients with a previous MAC infection, diagnosis of MAC without prophylaxis, and diagnosis of other Mycobacterium infection. Data collection included age, sex, race, CD4+ count, viral load use of antiretroviral therapy, concomitant opportunistic infections, MAC infection after azithromycin initiation, and insurance type.□□Results:□To be presented at the Great Lakes Pharmacy Resident Conference (GLPRC).□□Conclusions: □To be presented at GLPRC.

Learning Objectives:

Indicate when it is appropriate to start primary prophylaxis for MAC infection according to the CDC guidelines.

Discuss therapy options for the primary prevention of MAC infection in patients with AIDS.

Self Assessment Questions:

Guidelines published by the CDC recommend starting MAC prophylaxis in patients with a CD4+ count of _____.

A <50 cells/microliter

B: <75 cells/microliter

C: <100 cells/microliter

D: <200 cells/microliter

The mode of transmission of infection for MAC is thought to be primarily through:

A Direct contact with saliva, tears, or sweat

B Exposure to urine or feces

C Inhalation or ingestion

D Direct contact with blood

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-533 - L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE NEED FOR A UNIQUE FASTING BLOOD GLUCOSE GOAL IN THE NON-ICU HOSPITAL SETTING

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Background: Glycemic control during acute illness is often an overlooked aspect of patient care within the inpatient setting. The complexity of inpatient glycemic targets can lead to insufficient knowledge of appropriate glucose goals and form a barrier to appropriate glycemic control. The American College of Endocrinology and the American Diabetes Association addressed inpatient glycemic control with a consensus statement. A fasting goal of <140 mg/dL and a random goal of <180 mg/dL are advocated. Evidence supporting the stricter fasting blood glucose goal is lacking, complicates management, and warrants investigation. Purpose: The primary objective of this study is to evaluate whether or not fasting blood glucose levels between 140 and 180 mg/dL lead to increased rates of nosocomial infection compared to fasting blood glucose levels between 100 and 140 mg/dL in a general medicine population. Methods: A list will be generated of patients admitted to the general medicine unit over a five year period. The first 258 patients meeting study criteria for each the control and the experimental groups will be further evaluated. Glycemic control designation will be based on the patients FBG levels during the first three days of hospital stay. Charts will be reviewed for the following information: Patient demographics, FBG values, RBG values, microbiological culture results, presence of infection, hospital length of stay, ICU admission date (if applicable), admission diagnosis, patient problem list, new problems/diagnosis since admission, serum creatinine WBC count, and medication profile. Two-hundred and fifty eight patients in each group will be required to achieve 80% power and to detect a 2-fold increased rate of infection between the experimental and control groups Results/Conclusions: Data collection is in progress

Learning Objectives:

Recognize the non-ICU inpatient glycemic targets set forth by the ACE/ADA consensus statement.

Identify adverse patient outcomes that are related to poor glycemic control in the inpatient setting.

Self Assessment Questions:

What is the random blood glucose target for non-ICU patients set forth by the ACE/ADA consensus statement on inpatient glycemic control?

A <140 mg/dL

B: <160 mg/dL

C: <180 mg/dL

D: <200 mg/dL

Which of the following patient outcomes have been associated with poor glycemic control in the inpatient setting?

A Increased infection rate

B Decreased hospital length of stay

C Impaired wound healing

D A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-534 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CONTEMPORARY PHARMACY PRACTICE MODEL FOR CLINICAL THROMBOSIS MANAGEMENT

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Purpose: Survival of traditional models of anticoagulation management is being tested as novel treatment approaches continue to gain popularity. Defining and evaluating such practice models will be critical in delineating the anticoagulation providers role within a comprehensive clinical thrombosis management service. Aim 1 of this study is to compare quality of life in patients treated with warfarin and novel anticoagulants in order to assess perceived differences in therapy. Aim 2 will assess appropriateness of anticoagulation management to guide the structure and definition of a comprehensive practice model for clinical thrombosis management. Methods: This is a cross-sectional cohort study of an underserved, inner-city population using the Duke Anticoagulation and Satisfaction Scale (DASS) to test the hypothesis that there are differences in quality of life and appropriateness of anticoagulation management between patients treated with warfarin and novel anticoagulants. For Aim 1, mean scores and standard deviations will be calculated for overall quality of life and within each of the three sections of the questionnaire. Propensity scores will be estimated using a logistic regression for the treatment variable. For Aim 2, appropriateness of anticoagulation management is defined as baseline and subsequent periodic evaluation of relevant laboratory parameters, drug-interactions, adherence status, provider-patient contact, and patient education. Statistical analyses will assume a significance level of 0.05. A sample size of 64 patients in each group (warfarin and novel anticoagulants) will provide 80% power. Preliminary Results: Data collection is currently ongoing. Conclusions: It is anticipated that preliminary data will available for presentation at the Great Lakes Pharmacy Residency Conference in April 2013.

Learning Objectives:

Explain the importance of defining the role of a clinical pharmacist within a contemporary thrombosis management service

Identify differences in quality of life in patients on warfarin and novel anticoagulants in an underserved population

Self Assessment Questions:

Which of the following therapeutic advances in anticoagulation challenge the traditional model of pharmacist-driven anticoagulation management?

A Novel anticoagulants

B: Patient self-management of warfarin

C: Primary care physician management

D: A and B

This quality of life survey has been validated to assess patient satisfaction with anticoagulation across all indications and is considered the most reliable of its kind

A The Sawicki Instrument

B The Deep Vein Thrombosis Quality of Life (DVTQoL)

C The Duke Anticoagulation Satisfaction Scale (DASS)

D The Short-Form 36 Health Survey Questionnaire (SF-36)

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-535 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VANCOMYCIN DOSING IN THE OBESE ADULT POPULATION AT A COMMUNITY HOSPITAL

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Purpose: Anecdotal evidence and limited clinical studies have indicated that traditional vancomycin dosing strategies may lead to higher occurrences of non-therapeutic vancomycin trough levels in obese adult patients. The objective of this study is to determine the extent to which traditional vancomycin dosing strategies produce out of range trough levels in the obese population. Methods: This study has been deemed exempt from Institutional Review Board approval by the Western Institutional Review Board service. The pharmacy dispensing program will be used to identify patients with a body mass index of greater than 30 who received vancomycin therapy for at least 3 days. Patients included in the study must have had at least one appropriately drawn vancomycin trough level at steady state. Individuals with a creatinine clearance less than 60 ml/min were excluded from the study. The following data will be collected: age, height and weight, gender, BMI indication for vancomycin use, occurrence of sub/supra therapeutic vancomycin trough, incidence of nephrotoxicity, and vancomycin dosage. Data analysis will be aimed at describing efficacy and safety outcomes produced by standard vancomycin dosing regimens. Additionally, BMI subgroup analyses will be preformed to determine if the degree of obesity is related to vancomycin dosing outcomes. Ultimately, an estimated vancomycin dose required to produce therapeutic trough levels will be determined to potentially guide new vancomycin dosing strategies in the obese adult population. Results/Conclusion: Data collection currently in progress Preliminary results and conclusion to be presented.

Learning Objectives:

Describe changes in the pharmacokinetic disposition of vancomycin in obese patients

Discuss potential alternative vancomycin dosing schemes in obese patients

Self Assessment Questions:

Which of the following pharmacokinetic parameters is likely altered in obese patients receiving vancomycin?

A Protein binding

B: Receptor binding affinity

C: Hepatic metabolism

D: Volume of Distribution

Which of the following statements most likely describes the daily vancomycin dosing requirements of obese vs. non-obese patients?

A Obese patients require higher daily doses (mg/kg/day) than non-ob

B Obese patients require lower daily doses (mg/kg/day) than non-ob

C Obese patients require higher daily dose (mg/day) than non-obese

D Obese patients require lower daily doses (mg/day) than non-obese

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-746 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CHANGING FROM ONE BIOLOGIC TO ANOTHER AT THE JESSE BROWN VA MEDICAL CENTER

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Background: Inflammatory disease states such as rheumatoid arthritis psoriatic arthritis and ankylosing spondylitis can significantly impact patient functioning and reduce life expectancy. Patients often fail therapy with first line treatment regimens. Biologics are usually reserved for moderate to severe disease or disease that is refractory to traditional treatment. Tumor necrosis factor (TNF)-inhibitors such as etanercept, adalimumab, and infliximab and non-TNF biologics such as abatacept and rituximab reduce the hyper-immune response. Therefore, biologics ultimately reduce disease symptoms and progression. When patients fail an initial biologic agent either due to inefficacy or intolerance, a subsequent biologic agent may be used. Data on the success of a subsequent biologic agent varies based on the disease state, the class of biologic agent and the reason for initial treatment failure. At Jesse Brown VA, patients are switched routinely to subsequent biologic agents after failure of a previous biologic agent. Purpose: This study aims to address whether these switches are efficacious and safe based on disease state, the class of biologic agent and the reason for initial failure. Methods: This study is an Institutional Review Board and VA Research and Development Committee approved retrospective, electronic chart review of patients 18 or older with prescription fill histories for at least two of the following biologic agents: etanercept, adalimumab, infliximab, rituximab or abatacept, between January 1, 2002 and July 1, 2012. Included patients will also have one or more of the following diagnoses: rheumatoid arthritis, psoriatic arthritis or ankylosing spondylitis. Patients had to be followed for a minimum of three months after initiation of subsequent biologic agent. The primary endpoint is the efficacy of a subsequent biologic agent after discontinuation of a previous biologic agent due to inefficacy or intolerance. Results/Conclusions: Data collection and analysis are pending and will be presented at the Great Lakes Pharmacy Residency Conference in April 2013.

Learning Objectives:

Review the role of biologic agents in the management of three inflammatory disease states: rheumatoid arthritis, psoriatic arthritis and ankylosing spondylitis.

Discuss the efficacy of switching to a subsequent biologic agent after failure of at least one other biologic agent.

Self Assessment Questions:

Abatacept, etanercept and rituximab block the following components of the inflammatory cascade respectively:

A Tumor necrosis factor, T cell activation, B cell activation

B: T cell activation, Tumor necrosis factor, B cell activation

C: T cell activation, B cell activation, Tumor necrosis factor

D: B cell activation, T cell activation, Tumor necrosis factor

Abatacept and rituximab are FDA approved for which of the following disease states?

A Rheumatoid Arthritis

B Psoriatic Arthritis

C Ankylosing Spondylitis

D A and B

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-536 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE INCIDENCE AND RISK FACTORS FOR HIGH-DOSE METHOTREXATE INDUCED RENAL TOXICITY

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Purpose: High-dose methotrexate (HDMTX, doses ≥1g/m2) is a key component of several chemotherapy regimens used to treat patients with leukemias and lymphomas. Administration of HDMTX has numerous advantages, but can result in severe toxicities including nephrotoxicity and myelosuppression. Despite appropriate precautions with hydration, urine alkalinization, and leucovorin, renal toxicity may stil occur and lead to significant morbidity and mortality. Anecdotal reviews and years of experience have provided a better understanding of risk factors that may predispose patients to renal toxicity. However, the current literature focuses on patients with renal toxicity and lacks a comparison to those without toxicity. The purpose of this study is to describe the incidence of HDMTX-induced renal toxicity at our institution. The secondary objective is to determine risk factors for HDMTX-induced renal toxicity by examining characteristics of patients with and without renal toxicity.□□Methods: This is an Institutional Review Board approved, retrospective, single-center chart review. Patients between 18 and 89 years old, with a diagnosis of leukemia or lymphoma who received HDMTX were included. Prisoners and patients enrolled in a clinical trial using HDMTX and leucovorin were excluded. Serum creatinine and methotrexate concentrations were collected to evaluate toxicity. Data related to the following proposed risk factors were collected: age, gender, body mass index, methotrexate dose, number of HDMTX exposures, leucovorin administration route, baseline renal function, albumin, hydration status, clostridium difficile infection, urine pH, and concomitant interacting and nephrotoxic medications. Descriptive analyses will be used as appropriate and a Cox proportional hazard model will be utilized to evaluate risk factors.□□Results and Conclusions: Final analyses will include 140 patients with 353 HDMTX exposures. Fifty-four patients (38.6%) experienced renal toxicity of any grade; 27.9% with grade 1, 5.7% with grade 2, 3.6% grade 3, 0% with grade 4, and 1.4% with grade 5 toxicity. Analysis of risk factors and clinical correlation are ongoing.

Learning Objectives:

Review the toxicities of high-dose methotrexate administration.

Discuss the risk-factors for high-dose methotrexate-induced renal toxicity currently postulated in the literature.

Self Assessment Questions:

In addition to acute kidney injury, which of the following is a common adverse effect of HDMTX:

A Infusion reactions
B: Peripheral neuropathy
C: Mucositis
D: Hand-foot syndrome

Which of the following may be associated with an increased risk for HDMTX-induced renal toxicity?

A Urine pH >7
B Concomitant administration of omeprazole
C Leucovorin doses greater than 100mg/m2
D Fluid administration of 3-4 L/day

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-537 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF A STANDARDIZED ANTIBODY MEDIATED REJECTION PROTOCOL WITH A DIAGNOSTIC SCHEMA DIFFERENT FROM THE BANFF CRITERIA

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Antibody mediated rejection (ABMR) in kidney transplant recipients (KTRs) negatively impacts graft survival. The combination of plasmapheresis (PP) and intravenous immunoglobulin (IVIG) at various doses have been used to treat ABMR. Reports are limited to small case series with short follow up; additionally heterogeneity of treatment regimens hinders efficacy comparison. Furthermore, due to the limited utility of C4d staining and the lack of standardized quantitative tests for donor specific antibody (DSA), needs for a new ABMR diagnostic schema have been suggested in the clinical context. □□At our institution, clinical ABMR in KTRs was diagnosed based on graft dysfunction and histological evidence of graft injury (Banff type 2 or 3). C4d+ and detectable DSA were required only for Banff type 1. After diagnosis, patients were treated with 6 sessions of PP followed by IVIG every other day (100 mg/kg for first 5 PP and 500 mg/kg with last PP). Our study will evaluate the effectiveness and safety of our ABMR protocol in a large series and define factors associated with poor outcomes following treatment.□□We reviewed adult KTRs who were managed by the ABMR protocol between 9/2010-9/2012. Graft loss was defined as return to dialysis. Baseline characteristics will be compared between patients with and without graft loss and a multivariate regression model will be tested. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Outline treatment options for antibody mediated rejection in kidney transplant recipients

Identify clinical signs of antibody mediated rejection in kidney transplant recipients

Self Assessment Questions:

Which medication(s) can be used to treat antibody mediated rejection (ABMR)?

A PP and IVIG
B: bortezomib
C: rituximab
D: all of the above

Which statement is true regarding the diagnosis of ABMR?

A Positive C4d staining alone is considered diagnostic.
B A combination of allograft function, C4d, donor specific antibody a
C Acute tubular necrosis is a hallmark histological evidence of ABMI
D ABMR is medicated by donor specific antibody which is measured

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-538 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTING BEST PRACTICE SAFETY STANDARDS WITH ORAL ANTICANCER AGENTS AT A TERTIARY CARE ACADEMIC MEDICAL CENTER AND AMBULATORY CANCER CENTER

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Due to the increasing FDA approval rate of oral anticancer agents, safe practice guidelines by the American Society of Clinical Oncologists (ASCO) and Oncology Nursing Society (ONS) have been recently updated. At Froedtert Hospital, an academic medical center affiliated with the Medical College of Wisconsin, gaps exist in safety policies related to chemotherapy prescribing. An internal multidisciplinary oral anticancer agent task force was convened to identify existing safety practices and recommend improvements to physicians oral anticancer agent prescribing patterns in both inpatient and ambulatory areas.□□Pharmacists are a fundamental component of the patient care team at Froedtert Hospital and the Clinical Cancer Center, as they are actively involved in both inpatient and ambulatory oncology patient care. Currently, pharmacists do not verify the appropriateness of oral anticancer agents prescribed. This study is a single-center retrospective review evaluating prescribed oral anticancer agents, specifically capecitabine and temozolomide, for appropriately included criteria based on recommendations by ASCO/ONS Chemotherapy Administration Safety Standards over a 3 month period. The purpose of this safety review is to promote the involvement of pharmacists in review of prescribed oral anticancer agents at Froedtert Hospital and the Clinical Cancer Center.□□Prescriptions for either capecitabine or temozolomide for patients greater than 18 years old between August 5, 2012 and November 5, 2012 were identified and included in the analysis. The primary outcome measure is prescription error rate. Secondary outcomes are related to adherence to the ASCO/ONS Chemotherapy Administration Safety Standards recommendations for data inclusion on all oral anticancer agent prescriptions.□□Data collection and outcomes evaluation are currently being completed.

Learning Objectives:

Identify appropriate components of an oral anticancer prescription as recommended by ASCO/ONS.

Review the possible safety concerns related to oral anticancer agents as compared to intravenous chemotherapy.

Self Assessment Questions:

Which of the following components may be important to include in a prescription for oral anticancer agents that is not mandated in legend drug prescriptions?

A Directions for use
B: Dosage form of drug
C: Patient's full name
D: Patient's weight and/or body surface area

Which of the following statements is TRUE regarding oral anticancer drug therapy?

A Oral anticancer therapy has better adherence than intravenous ant
B Oral anticancer therapy has fewer safety standards at many institu
C Oral anticancer therapy is less expensive than intravenous antican
D Oral anticancer therapy is less toxic to patients than intravenous a

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-845 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CLINICAL OUTCOMES IN PATIENTS WITH GRAM-NEGATIVE BLOODSTREAM INFECTIONS ACCORDING TO CEFEPIME MINIMUM INHIBITORY CONCENTRATION

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Purpose: Infections caused by multidrug resistant gram negative organisms and extensively drug resistant gram negative organisms have become a major challenge to healthcare practitioners. Selection of appropriate empiric antimicrobial therapy can reduce morbidity and mortality in severe infection. Recent reports suggest that utilization of cefepime may be associated with worse outcomes in Gram negative blood stream infections (GNBSI) if the minimum inhibitory concentration (MIC) is greater than or equal to 8 mg/liter. The primary aim of this study is to assess the contribution of cefepime MIC to the confounder adjusted outcomes of patients with GNBSI.□Methods: We will complete a retrospective, observational, cohort study to evaluate patients who have at least one GNBSI and were treated empirically with cefepime. Patients admitted to Northwestern Memorial Hospital from September 1, 2006 to August 31, 2012 will be identified from the electronic medical record. Patients will be stratified based on GNBSI cefepime MIC and adjusted for comorbidities. The primary outcome will be in-hospital mortality and will be analyzed according to MIC of the isolate. Secondary outcomes will be time-to-death due to infection, duration of infection, length of stay post culture stratified for treatment utilized, and duration of antibiotic use in the treatment of infection. Planned subgroup comparisons will be made based on extended spectrum beta- lactamase (ESBL) status, cefepime dosing, and whether patients received appropriate fluid resuscitation. Adjustments will be made for patient comorbidities.□Results / Conclusions: Results and conclusions will be presented at the Great Lakes Residency Conference pending data collection and analysis.

Learning Objectives:

Identify features of beta-lactam antibiotics associated with efficacy in blood stream infections.

Explain how extended-spectrum beta-lactamases can impact empiric selection of antimicrobials.

Self Assessment Questions:

Which of the following statements regarding beta-lactam antibiotics is true?

A Can be optimized for a given patient by ensuring high peaks and lo
B: May be inactivated by various types of beta-lactamases leading to
C: Elevated beta-lactam MICs have not been associated with worse c
D: None of the above are true

Which of the following statements regarding treatment of ESBL infections is true?

A Treat all patients who are colonized with an ESBL with carbapener
B Select therapy for an ESBL infection based on the site of infection
C Combination therapy for an ESBL infection should always include
D None of the above are true

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-539 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PREVALENCE AND RISK FACTORS FOR DRUG INTERACTIONS WITH BOCEPREVIR AND TELAPREVIR

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Purpose: Chronic Hepatitis C (cHCV) is a major health concern as rates of cHCV related morbidity and mortality are increasing with the aging cHCV population. While use of recently approved protease inhibitors (PIs) has led to significantly improved rates of cure for those with cHCV genotype 1 and will likely reduce associated complications, their use greatly increases the likelihood for clinically significant drug interactions (CSDIs) with concomitant medications. To date, little is known regarding the frequency and management of PI-associated drug interactions in clinical practice. This study is intended to facilitate a better understanding of the frequency and significance of DIs encountered at PI treatment initiation, and to develop evidenced-based management recommendations for common drug interactions.□□Methodology: A descriptive retrospective chart review will be conducted on all patients with cHCV that have initiated boceprevir or telaprevir-based therapy at VA facilities in Ohio from October 1, 2011January 18, 2013. Data from cHCV treatment initiation visits will be collected including concomitant medications, potential risk factors for a CSDI to occur, and therapy modifications made to avoid CSDIs. Concomitant medications identified as a potential DI will have the quality of evidence rated for an association utilizing the GRADE approach. The quality of evidence will be rated as high, moderate, low, or very low; and is guided by the presence of indirectness, imprecision, and inconsistency. The strength of the recommendation for therapy modification will be classified as strong or weak. Differences in categorical variables will be assessed with the Pearson X2 test and continuous variables with the Students t-test. Potential risk factors for CSDIs will be analyzed using a logistic regression model as power allows. P values <0.05 will be considered statistically significant.□□Results / Conclusions: Results pending, will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the need for a better understanding of frequency and nature of drug interactions with boceprevir and telaprevir.

Describe the role of a pharmacist in preventing drug interactions with boceprevir and telaprevir.

Self Assessment Questions:

Which of the following is true about drug interactions with boceprevir and telaprevir?

A Most of what we know about drug interactions comes from well-de
B: The various drug interaction resources available are consistent wit
C: The various drug interaction resources available are consistent wit
D: Many of the “known drug interactions” are theoretical and based o

Boceprevir and telaprevir are both inhibitors of and metabolized by which cytochrome p450 enzyme?

A Cyp2d6
B Cyp3a4
C Cyp2c19
D Cyp1a2

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-540 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HYPERCALCEMIA IN THE CITICALLY ILL: PAMIDRONATE VS NO PAMIDRONATE

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Purpose: Hypercalcemia in critically ill patients can evolve into life threatening arrhythmias. Recently, extreme levels of hypercalcemia have been associated with increased mortality. Bisphosphonates are commonly used in treatment of hypercalcemia. We evaluated the use of pamidronate in the treatment of hypercalcemia in our critically ill population. The purpose of this study is to evaluate if the use of pamidronate in critically ill patients with hypercalcemia affects outcomes.□□Methods: This retrospective study evaluated 30 critically ill patients from 1/09 to 4/12 with hypercalcemia (defined as ionized calcium (ioCa) ≥ 1.25 mmol/L corrected for pH). Patients admitted to the ICU > 48 hrs were 1:1 case matched based on APACHE II and physician service and divided into groups: hypercalcemia treated with pamidronate (P) vs no pamidronate (NP). Patients with primary hyperparathyroidism were excluded. P-value <0.05 was considered significant.□□Results: The mean age was 5413 yrs with an overall APACHE II of 229, SOFA of 85, and 93% admitted to a surgery service. Admission ioCa were similar: 1.160.27 P vs 1.120.16 NP, p=0.61. Hypercalcemia onset was quicker in the P group, 63P vs 1812NP days, p=0.003. Both the duration of hypercalcemia (189P vs 67NP days, p<0.001) and time to normalization after therapy (1110P vs 45NP days, p=0.01) were longer in the P group. Renal failure requiring dialysis occurred more frequently with P, 53% vs 20%, p=0.12. The number of hypercalcemia episodes was similar between groups, 21P vs 21NP, p=0.20. ICU length of stay tended to be longer in the P group, 4130P vs 2522NP days, p=0.12; however, in-hospital mortality was not different. □□

Conclusion: Hypercalcemia in the critically ill is a significant problem. Patients treated with pamidronate had more renal failure and increased ICU length of stay. More studies are needed to address pamidronates role in hypercalcemia of critical illness.

Learning Objectives:

Discuss the impact of hypercalcemia in the critically ill.

Identify the impact of pamidronate on hypercalcemia of critical illness.

Self Assessment Questions:

Risk factors for arrhythmias in the ICU include the following:

A Electrolyte abnormalities
B: Dehydration
C: Medications
D: All of the above

A known adverse effect of pamidronate is:

A QTc prolongation
B Respiratory distress
C Renal impairment
D Gastrointestinal upset

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-541 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF INTRAVENOUS VANCOMYCIN AND INCIDENCE OF NEPHROTOXICITY IN ADULT HOSPITALIZED PATIENTS: A RETROSPECTIVE COHORT REVIEW

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PURPOSE: Vancomycin is a glycopeptide antibiotic with activity agains gram-positive organisms with primary use in the treatment of methicillin-resistant Staphylococcus aureus infections. With increasing minimum inhibitory serum concentrations for vancomycin, more aggressive dosing strategies have been recommended. Monitoring of vancomycin serum concentrations allows clinicians to target a narrow therapeutic range and lessen the potential for toxicity. With the recommendation of higher trough concentrations there is potential for a greater incidence of nephrotoxicity. This study will investigate differences in nephrotoxicity between groups of patients with different targeted vancomycin trough concentrations.□□METHODS: This retrospective cohort review will identify patients 18 years and older, admitted to Saint Marys Health Care from July 1, 2011 through June 30, 2012. Patients must have received treatment with intravenous vancomycin with at least one vancomycin serum concentration measured during therapy. Nephrotoxicity will be defined as two consecutive serum creatinine increases of at least 0.5mg/dL or a ≥ 50% increase from baseline during vancomycin therapy. The primary outcome measure will be to evaluate cohorts based upon vancomycin trough concentrations: Group 1: 10-15mcg/mL and Group 2: 15-20mcg/mL to assess for differences in the incidence of nephrotoxicity. Secondary objectives are to determine a time-course and risk factors for development of nephrotoxicity. Data to be collected: patient demographic information, initial dose, target and measured vancomycin concentration and infectious diagnosis. Secondary measures will include: diagnosis of sepsis and receipt of: IV contrast media, angiotensin receptor blockers, angiotensin converting enzyme inhibitors, IV aminoglycoside or non-steroidal anti-inflammatory drugs and time to onset of nephrotoxicity. Nominal scale data will be evaluated using a Chi-square test, while continuous scale outcomes will be assessed with a student t-test. Additionally, correlation analysis will be conducted where applicable to investigate suspected relationships between variables.□□RESULTS: Data analysis is currently in progress.□□CONCLUSIONS: To be presented at the GLPRC

Learning Objectives:

Report the incidence of nephrotoxicity in each intravenous vancomycin treated cohort based upon target trough concentrations.

Discuss factors that may contribute to the development of nephrotoxicity in patients treated with intravenous vancomycin.

Self Assessment Questions:

Which of the following statements is true regarding monitoring of serum vancomycin concentrations?

A A.□Twice weekly monitoring is recommended when targeting troug
B: B.□Peak vancomycin levels are recommended due to the multi-ex
C: C.□Although variable, steady-state trough concentrations should b
D: D.□Exposure to serum trough concentrations of <10mcg/mL has b

Which of the following is recommended for vancomycin dosing and monitoring?

A Adjusted body weight is preferred for determining dose for obese p
B Regular monitoring is recommended to prevent ototoxicity.
C Daily monitoring of levels may be required in some patients.
D Target trough concentrations of <15mcg/mL are recommended for

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-542 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ADHERENCE TO AND THE OUTCOMES OF CLOSTRIDIUM DIFFICILE INFECTION TREATMENT GUIDELINES IN NEUTROPENIC VERSUS NON-NEUTROPENIC PATIENTS

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Clostridium difficile is a spore-forming gram-positive anaerobic bacillus that accounts for 15%-25% of all cases of antibiotic-induced diarrhea. Currently, SHEA/IDSA guidelines stratify patients with CDI according to both severity of disease as well as first episode versus recurrence. Specifically, patients whom present with an initial mild to moderate episode with a WBC count < 15,000 cell/l and a serum creatinine (Scr) level < 1.5 times the premorbid level are treated empirically with intravenous or oral metronidazole. In contrast, patients with an initial severe episode, with a WBC count ≥ 15,000 cells/l and Scr ≥ 1.5 the premorbid level are treated with oral vancomycin. Those patients with a severe episode as defined above in addition to hypotension, shock, ileus or megacolon are treated with higher doses of oral vancomycin and intravenous metronidazole. Individuals with neutrophil counts <500/L are at substantial risk for developing infections. However, the current criteria that categorize patients based on severity of CDI exclude the neutropenic patient population. Neutropenia introduces a dilemma to the management in CDI in that patients with malignancies are susceptible to CDI as most have neutropenia and present with a combination of risk factors for CDI such as recent receipt of chemotherapy and antibiotics. The purpose of this study is to determine how neutropenic patients are being treated in accordance with the CDI guidelines and whether this adherence affects patient outcomes compared to non-neutropenic patients. □□□Methods□This was a retrospective chart review to evaluate adherence to and outcomes associated with CDI treatment guidelines at ALGH between March 2009 through November 2012. A subgroup case-control analysis of the neutropenic population was conducted to compare the outcomes of CDI in neutropenic subjects to non-neutropenic subjects. Evaluation of patients was conducted on a 2:1 case-control basis. □□□Data are currently being collected and results are pending.

Learning Objectives:

Discuss CDI outcomes in neutropenic patients versus non-neutropenic patients.

Describe the empiric antibiotic regimen (s) used to treat neutropenic patients with CDI

Self Assessment Questions:

Patients with neutropenia and a documented Clostridium difficile infection may not be stratified appropriately with regard to severity because of the following:

A They often do not present with fevers on admission
B: Neutropenic patients are not candidates for metronidazole therapy
C: Their WBC count is < 15,000 cells/mm3 and are therefore difficult
D: They are immunocompromised and therefore are by definition con

Patients with neutropenia may have the additional following risk factors that may subject them to development of a CDI:

A Recent receipt of chemotherapy in addition to antibiotic therapy
B They are often elderly and are therefore at a greater risk for CDI
C They must receive concomitant PPI therapy while admitted, increa
D They are more likely to have re-infections and recurrences due to

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-543 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF RETURNED-TO-STOCK PRESCRIPTIONS FROM OFF SITE FEDERALLY QUALIFIED HEALTH CENTERS

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Introduction: Patients who receive care from certain Federally Qualified Health Centers (FQHCs) are eligible to receive prescriptions for medications purchased under the 340b Drug Pricing Program. To delive this service, our pharmacy fills prescriptions at a central location and ships them to off-site satellites within contracted FQHCs for patient pickup. Prescriptions that are not picked up at the clinic site are returnec to the central pharmacy as a return-to-stock (RTS).□□Purpose: The purpose of this study is to 1) identify the most common "reasons-for-return" on all RTS prescriptions; 2) analyze trends associated with RTS prescriptions; 3) design and develop an appropriate interventionthat will reduce the likelihood of future returns.□□Methods: With the aid of pharmacy technicians and LPNs staffed at each off-site satellite, the following data will be collected: reason for return, clinic site, date of fill, patient demographics, prescription details, insurance/payment plan, and copay. Reasons for return will be selected from a list of predefined options in order to eliminate subjectivity. Reason for return will be confirmed by study investigator through patient/provider communication in order to ensure validity. All data collected will be entered into Excel & analyzed to identify trends. Using this information, an appropriate intervention will be developed. Appropriate statistical analysis and tests will be utilized and a p-value of 0.05 will determine statistical significance.□□Preliminary Results: 69% of all returned prescriptions were not picked up within the time period that the clinics hold prescription before return. Among the 31% of prescriptions that were returned early, 3% were cancelled by the ordering clinic, 22% were duplicate fills, 3% were early fills, 18% were refused by patients, 4% were due to a patient regimen change, 24% were transferred, 6% were returned subsequent to a dispensing error, and 7% were refused due to cost.

Learning Objectives:

Describe common causes of non-fills and non-compliance in the community setting.

Identify potential solutions to reduce the frequency of non-fills and non-compliance.

Self Assessment Questions:

Which of the following represents a potential solution for improving compliance?

A Disease state education

B: Collaboration between physicians and pharmacists

C: Reminder phone calls and other adherence tools

D: All of the above have been demonstrated to improve compliance t

Non-compliance to medication therapies...

A is only an issue with acute courses of therapy.

B is almost exclusively related to cost.

C is a well documented problem affecting a variety of disease states

D can be virtually eliminated by reducing workflow process errors.

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-747 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVING PAIN-RELATED PATIENT SATISFACTION SCORES ON A GENERAL MEDICINE UNIT IN A COMMUNITY-BASED HOSPITAL

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Purpose: □Pain is very prevalent in hospitalized patients. Although there are guidelines and literature to provide direction in the treatment of surgical and malignant pain, there is very little literature on pain management in adult general medical inpatients. The purpose of this study is to implement a multidisciplinary approach to improve patient satisfaction scores regarding pain management on a general medicine unit. We predict that patients who are more involved in their own pain management as well as treated early with scheduled acetaminophen and/or topical as needed medications, will be more satisfied with their pain control throughout their hospital stay. □□Methods: □This prospective study includes adult patients admitted to the general medicine/pulmonary unit of St. Marys Hospital. Informed consent will be obtained, and a pain diary will be distributed to all patients enrolled in the study. Pharmacists and nursing staff will monitor patients to identify appropriate candidates for scheduled acetaminophen (650mg orally three times daily) and/or as needed topical pain relieving agents (lidocaine cream or methyl salicylate and menthol cream), and request orders for these agents from the attending physician. Exclusion criteria for the pain medication recommendation intervention (but not a pain diary) include surgical pain, malignant pain, severe pain (≥7), high dose narcotics, or long-acting narcotics. Outcome measures include unit HCAHPS scores, percentage of patients whose pain levels decrease from baseline, percentage of patients whose pain levels do not reach severe, and pain scores after 24 and 48 hours after treatment. Other data to be collected include age, gender, admitting patient diagnosis, initial pain score, and if the pain diary was used.□□Results: □Data collection is currently underway. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the literature and guidelines available to assist healthcare professionals in treating pain in general medical inpatients.

Identify which patients would be appropriate for scheduled acetaminophen and those that would not be.

Self Assessment Questions:

Which of the following is true regarding pain management in adult medical inpatients (nonsurgical and nonmalignant)?

A There are specific pain management guidelines that should be foll

B: Pain management should not be a priority in this population unless

C: There is a need for high-quality studies in order to determine speci

D: Narcotics should be considered first line pain management therap

Which of the following patients would be appropriate to receive scheduled acetaminophen?

A A patient who has been admitted with severe abdominal pain due

B A patient who has a headache with minor aches and pains from ly

C A patient admitted with severe back pain who takes high doses of

D A patient with cirrhosis with minor back pain.

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-544 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPROVING THE COLLECTION OF DRUG ALLERGY INFORMATION

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Purpose: An accurate medication allergy history is an important component of safe patient care in institutionalized settings, as well as in the community. The best medical treatment is provided when allergy information is complete and accurate, as the provider is able to make a more informed decision on options for optimal therapy. Such history may include information about what reaction occurred, the types and severity of symptoms experienced, and when the reaction ensued. Literature has documented that many patients have discrepancies between true allergies and those recorded in their medical record. The objective of this project was to increase the amount of clinical information being documented on the electronic patient allergy record at the time of admission to the hospital, including type of reaction and description of symptoms. Methods: A review of the current literature was done to assess previous methods used to improve the collection of patients allergy histories. After assessment of current processes utilized at St. Lukes Medical Center, medication reconciliation pharmacy technicians were identified as being in an optimal position to collect accurate and detailed allergy histories. This is based not only on their familiarity with medications, but also their direct access to patients as they are currently completing medication reconciliations on all patients being admitted. An educational tool was then developed in order to train the technicians to take an allergy history. Training occurred during the months of December and January, with concurrent initiation of the process, primarily in the emergency department, but also on all of the hospital inpatient units. To assess the intervention, a metric was created that will measure the amount of clinical information documented within new allergies entered into the patients electronic medical record.

Results/Conclusions: Results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

List the multiple components related to an allergic reaction that are important to document in a complete medication allergy history.

Describe how incorrect or incomplete allergy histories can be a cause of serious adverse drug reactions in healthcare.

Self Assessment Questions:

What may cause a medication to be recorded incorrectly in the patients allergy history?

A Patient with low health literacy reports no allergies when true allerg
B: Allergy history updated by immunologist during office visit
C: Patients gets a mild headache after taking a medication and repor
D: Medication name look-alike, sound-alike entered incorrectly by car

Which of the following is not an important component of a complete medication allergy history?

A Reaction that occurred
B Severity of allergy
C Medication compliance
D Timing of the reaction

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-846 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

LONG-TERM WARFARIN USE IN THE REHABILITATION UNIT

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Purpose: Over two million patients in the U.S. take warfarin. Determining the appropriate warfarin dose is a complex balance of following an institutions dosing protocol and taking into account multiple factors, such as interactions, active bleeding and risk of thrombosis. The current warfarin protocol at St. John Hospital and Medical Center (SJHMC) outlines dosing recommendations from initiation through day five. Beyond day five, dosing decisions are made on a patient specific basis utilizing the pharmacists clinical discretion. Anecdotal evidence suggests that this practice may lead to inconsistent dosing, which may decrease time in therapeutic range (TTR) and may increase the risk of adverse events. The purpose of this study is to determine the association between current dosing practices in long-term warfarin patients at SJHMC and drug therapy outcomes. Methods: This is a single center, retrospective chart review. Patients will be included if they are admitted to the rehabilitation unit at SJHMC and are receiving warfarin. Patients will be excluded if they are pregnant, less than 18 years of age, or receiving warfarin therapy not dosed by pharmacy consult services. To adequately describe current warfarin dosing practices and outcomes the following information will be collected: TTR, rate of achieving target international normalized ratio (INR) by day 5 of therapy, and the rate of adverse events (thrombotic and hemorrhagic). Additional data to be collected include: baseline demographics, kidney and liver function, usage of other anticoagulants, antiplatelet or reversal agents, interacting medications, and variations in diet. Results/Conclusions: To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the patient, disease state, and clinician related factors that contribute to the complexity of warfarin dosing.

Discuss various methods utilized in the evaluation of warfarin therapy.

Self Assessment Questions:

Which of the following medications would increase the concentration of warfarin?

A Aspirin
B: Baclofen
C: Ciprofloxacin
D: Doperidol

How is the TTR calculated?

A Absolute value of the total time in range over total time on warfarin
B Percentage of total time in range over total time on warfarin
C Absolute value of the number of times in range over total time on w
D Percentage of the number of times in range over total time on warf

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-545 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF RISK FACTORS AND STRATEGIES FOR PREVENTION OF PULMONARY EMBOLISM/DEEP VEIN THROMBOSIS IN POST-OPERATIVE PATIENTS AT THE UNIVERSITY OF CHICAGO MEDICAL CENTER

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Venous thromboembolism (VTE) is a preventable complication in post operative patients. Studies have shown that only 62.3% of at risk patients receive appropriate prophylaxis and that providing prophylaxis significantly decreases VTE rates, morbidity and mortality. The University of Chicago Medical Center (UCMC) is ranked 61/91 in terms of post operative VTE rates according to University Health System Consortium data with a VTE incidence of 10.72/1000 patients. The study is being conducted to determine iatrogenic risk factors that contribute to increased VTE rates in order to help create and improve protocols geared toward decreasing these rates and to determine whether implemented interventions are effective in decreasing VTE rates. The findings and outcomes of this study will attempt to help the VTE Task Force achieve its goal to decrease VTE rates by 10% for the fiscal year 2013. The study design includes two phases. Data is currently being collected retrospectively to determine risk factors for VTE. Interventions will be made with approval from the VTE Task Force based upon the results of the retrospective analysis. Data will then be collected prospectively to determine the ability of implemented interventions to decrease VTE rates. Patients undergoing burn, neurosurgical, spinal, cardiac, gynecology-oncology and plastic surgery procedures at UCMC between June 2010 and May 2012 will be included in the retrospective analysis. Patients in the same surgical populations undergoing procedures between February 2013 and March 2013 will be included in the prospective analysis. The primary outcomes are VTE rates pre and post intervention implementation. The secondary outcomes include hospital length of stay and bleeding rates. We have received IRB approval and data collection is currently being completed. Data analysis will be completed in the next few months. Results and conclusions will be presented at the Great Lakes Conference.

Learning Objectives:

Identify risk factors that contribute to an increased risk of venous thromboembolism in post operative patients

Describe the effectiveness of certain interventions in decreasing rates of venous thromboembolism in specific surgical populations at UCMC

Self Assessment Questions:

Which of the following are risk factors for venous thromboembolism in surgical patients?

A Acute kidney injury
B: Morbid obesity
C: Malignancy
D: B and C

Which of the following is the recommended venous thromboembolism prophylactic regimen for a neurosurgery patient with brain cancer and normal renal function?

A Intermittent pneumatic compression
B No prophylaxis
C Heparin 5000 units q 12 hours
D Enoxaparin 40mg daily plus intermittent pneumatic compression

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-546 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF CLINICAL OUTCOMES OF COMBINATION- VERSUS MONOTHERAPY FOR SEVERE AND SEVERE COMPLICATED CLOSTRIDIUM DIFFICILE INFECTION

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Background: Clostridium difficile is an anaerobic, gram-positive, spore-forming bacillus accounting for 20-30% of all episodes of antibiotic-associated diarrhea. Over the past decade, the frequency and severity of Clostridium difficile infections (CDI) have significantly increased. The Society of Healthcare Epidemiology of America (SHEA)/Infectious Disease Society of America (IDSA) guidelines for treatment of severe and severe, complicated CDI suggest use of high-dose oral vancomycin as monotherapy or in combination with intravenous metronidazole. While use of combination therapy is common practice at many institutions, the recommendation is based on expert opinion without substantial supporting clinical evidence. The increasing prevalence and severity of CDI and lack of strong evidence to support the use of combination therapy warrants further investigation. Purpose: This study aims to evaluate the clinical outcomes associated with combination- versus monotherapy for the treatment of severe and severe, complicated CDI. Methods: This is a single-center, retrospective chart review of adult inpatients between January 2011 and June 2012. Eligible patients will have a positive Clostridium difficile toxin by polymerase chain reaction, symptoms or radiologic evidence of infection and received intravenous or oral metronidazole and/or oral vancomycin for severe or severe, complicated CDI. Patients that received less than 72 hours of antibiotic therapy for treatment of CDI or have a medical condition that predisposes them to diarrhea will be excluded. Patient-specific data, including demographics, lab values, vital signs, and details of antibiotic therapy, will be collected. The primary endpoint is time to clinical improvement for patients receiving monotherapy versus combination therapy for severe and severe, complicated CDI. Secondary endpoints include length of therapy, major complications, treatment failure, global cure rates and appropriateness of therapy, according to IDSA/SHEA guidelines. Results: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Define characteristics of severe and severe, complicated CDI.

Review the current practice guidelines for treatment of severe and severe, complicated CDI.

Self Assessment Questions:

A CDI is considered complicated in the setting of:

A Hypotension/Shock
B: Ileus
C: Megacolon
D: Any of the above

For treatment of severe, complicated CDI, the IDSA/SHEA guidelines recommend use of:

A Vancomycin
B Metronidazole
C Rifampin
D A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-547 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES ASSOCIATED WITH THE USE OF PIPERACILLIN-TAZOBACTAM IN THE TREATMENT OF SUSCEPTIBLE PSEUDOMONAS AERUGINOSA BACTERMIA WITH ELEVATED MINIMUM INHIBITORY CONCENTRATIONS

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Background: Pseudomonas aeruginosa (PsA) is the fifth most commonly isolated bacterial pathogen causing nosocomial infections and has been associated with high rates of morbidity and mortality. Piperacillin-tazobactam (PTZ) possesses activity against a wide range of organisms including PsA and an exceptional safety profile, making it an attractive option in the treatment of serious infections where PsA is suspected. However, recent clinical data have shown an increase in poor outcomes associated with susceptible PsA strains known to have minimum inhibitory concentrations (MICs) >16ug/mL. Tam et al observed a nearly four times greater rate of 30-day mortality associated with PTZ when compared to alternative therapies in PsA bloodstream infections caused by isolates with PTZ MICs of 32-64ug/mL. Data such as these has led many experts to recommend limiting the use of PTZ in the setting of elevated MICs. As such, the Clinical Laboratory Standards Institute (CLSI) has recently lowered its breakpoint for PsA susceptible to PTZ to ≤16ug/mL. These recommendations are however discordant with the interpretations provided by current FDA approved susceptibility testing methods, representing an area for concern when clinicians must interpret culture susceptibility reports.□□Purpose: The aim of this study is to assess outcomes associated with PTZ in the treatment of PsA bacteremia caused by isolates possessing elevated MICs at UK HealthCare over the past 5 years. □□Methods: Patients with a blood culture positive for PsA between 01/01/2008 and 10/01/2012 were identified from the microbiology laboratory database and included in this study. Patients under the age of 18 or who were pregnant at the time of treatment were excluded. Susceptibility data, patient demographics, treatment data, as well as clinical and microbiological outcomes were collected from the medical records. Study arms were created on the basis of the PsA isolates PTZ MIC; ≤16ug/mL or 32-64ug/mL. Clinical, microbiological, and 30-day follow-up data will be compared between arms. □□Results: Data collection is ongoing.

Learning Objectives:

Recognize the discordance between recent clinical data, CLSI breakpoints, and FDA validated susceptibility reporting methods in the interpretation of pipercillin- tazobactam minimum inhibitory concentrations.

Describe outcomes associated with the use of pipercillin- tazobactam fo the treatment of Pseudomonas aeruginosa bacteremia with elevated minimum inhibitory concentrations.

Self Assessment Questions:

What is the current CLSI recommended breakpoint for PTZ against strains of PsA?

A ≤8ug/mL
B: ≤16ug/mL
C: ≤32ug/mL
D: ≤64ug/mL

Modification of reported susceptibility interpretations provided by automated testing methods validated by the FDA requires which of the following?

A A corresponding change in CLSI breakpoints
B Purchasing of updated automated systems
C Re- validation of results using FDA supplied kits
D Cannot be done

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-748 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMAL MANAGEMENT OF CATHETER-RELATED BLOODSTREAM INFECTIONS IN END STAGE RENAL DISEASE PATIENTS

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Background:□Catheter-related bloodstream infections (CRBSIs) are a major cause of morbidity and mortality amongst End Stage Renal Disease (ESRD) patients. The Infectious Disease Society of America established antimicrobial guidelines for the treatment and management of CRBSIs in 2009. These guidelines were used to create institutional guidelines at Henry Ford Hospital. It is necessary to assess clinician adherence to these guidelines and determine if they resulted in improved outcomes in patients. Studies have shown that CRBSIs in ESRD patients on hemodialysis can be linked to other poor clinical outcomes, for this reason proper management is essential.□□Purpose:□To examine the relationship between management of CRBSI in hemodialysis patients and clinical outcomes.□□Methods:□This is a retrospective cohort study of ESRD patients on hemodialysis from 2008 to 2012 with a catheter-related bloodstream infection. Inclusion criteria consist of age greater than 18 years, ESRD patient dialyzing with a tunneled catheter and having a confirmed CRBSI. Patient and infection characteristics will be collected including baseline demographics, CRBS presentation characteristics, severity of illness and microbiologic data. Treatment characteristics collected include catheter management, empiric and definitive antimicrobial therapy and work-up for metastatic infection. Clinical outcomes measured will include treatment failure and overall adherence to each component of the treatment guidelines including: choice of empiric therapy, de-escalation of therapy, removal o catheter, appropriate imaging and duration of therapy.□□The primary endpoint will be a comparison of treatment failure between patients in the pre-guideline implementation group versus those in the post-guideline implementation group. Treatment failure is defined as a composite of death, recurrence of infection, or microbiologic failure. The secondary endpoints include the relationship between adherence to guidelines and clinical outcomes.□□Results and Conclusions:□The results and conclusions will be presented at the Great Lakes Residency Conference.□□Conflict of Interest:□The authors have no conflict of interest to disclose.

Learning Objectives:

Review the current management of hemodialysis-catheter-related bloodstream infections based on IDSA established guidelines.

Identify management characteristics of catheter-related bloodstream infections related to poor outcome in the hemodialysis population.

Self Assessment Questions:

For an ESRD patient on hemodialysis, if a blood stream infection is established to be catheter-related, when would it be necessary to remove/exchange the catheter if not attempting catheter salvage?

A Greater than 96 hours following a positive culture
B: Greater than 72 hours following a positive culture
C: Less than 72 hours following a positive culture
D: Less than 96 hours following a positive culture

What is one of the common clinical outcomes most often associated with poor management of catheter-related bloodstream infections in the hemodialysis population?

A Recurrence of infection with the same microorganism
B Positive blood cultures
C Death
D Escalation of level of care

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-548 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF TRAINING DOCUMENTS AND PRACTICAL COMPETENCIES FOR PHARMACY AUTOMATION

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Purpose: Automated dispensing technology is heavily utilized throughout all of Aurora Health Cares inpatient pharmacies. Due to the complexity of the systems and rapid adoption of new technology, the pharmacy department identified a need for strong training materials and standard operating procedures. By developing standardized training materials, I hope to decrease the variable use of systems between pharmacy sites, and minimize inefficiencies, dispensing errors, and inventory discrepancies. The desired outcome of this project is to develop and implement standardized training documents for all the automated systems throughout the Aurora inpatient pharmacies. Methods: The first portion of this project is to review available company training material on the pharmacy automation systems currently in place. After the review of the current company training materials, I will train on automated systems, to gain additional working knowledge of the automation. After I have strong working knowledge of the automation and how it is used at Aurora, I will develop Aurora specific training documents. The second portion of this project is to validate the training materials, and implement the use of the documents into pharmacy personnel training. Practical demonstrations will be utilized to evaluate the effectiveness of the training manuals. Results/Conclusions: Manual development and implementation is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss ways to implement training materials into pharmacy personnel training

Outline ways to develop training materials for personnel training

Self Assessment Questions:

Lack of standardized training materials on pharmacy automation can lead to which of the following:

A Inventory discrepancies

B: Dispensing errors

C: Inefficiencies

D: All of the above

Effectiveness of training documents at Aurora Health Care will be measured in the following ways:

A Practical demonstrations

B Written test

C Verbal test

D Online survey

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-749 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ANTIEMETIC PROPHYLAXIS OF CHEMOTHERAPY INDUCED NAUSEA AND VOMITING: A COST AND COMPLIANCE ANALYSIS

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Background: Chemotherapy-induced nausea and vomiting (CINV) remains one of the most common and feared adverse effects of cancer chemotherapy. The National Comprehensive Cancer Network (NCCN), American Society of Clinical Oncology (ASCO) and Multinational Association of Supportive Care in Cancer (MASCC) have published guidelines on how to determine a patients initial emetic risk and what anti-emetics to initiate based on chemotherapy regimen and patient risk factors. Chemotherapy agents are grouped based on their emetogenic potential into high (>90%), moderate (>30-90%), low (10-30%) or minimal (<10%) emetic risk and using this classification system, starting with the lowest effective dose of an antiemetic is recommended. At the Josephine Ford Cancer Institute at Henry Ford Macomb Hospital, there is no protocol in place to determine what anti-emetic regimen a new cancer patient receiving chemotherapy should start with. Purpose: The objective of this study is to evaluate the current use of anti-emetics for the initial treatment of CINV in patients receiving chemotherapy at our institution and to measure the costs associated with not initiating anti emetic therapy objectively based on chemotherapy drug emetogenicity. Methods: This study is a retrospective chart review of cancer patients who received their first dose of chemotherapy anytime from January 1, 2012 to January 1, 2013. The antiemetics prescribed to each patient will be compared to whats acceptable first line treatment according to Henry Ford Hospitals protocol. Average wholesale prices for antiemetics as well as our hospitals cost for purchasing those antiemetics will be used to calculate cost differences. Results/Conclusion: Data collection is still underway with final results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Discuss the factors involved in determining a patients risk of developing chemotherapy-induced nausea and vomiting (CINV).

Identify the optimal anti-emetic regimen to prevent a cancer patient from experiencing CINV.

Self Assessment Questions:

Which of the following is a risk factor associated with chemotherapy-induced nausea and vomiting?

A Age > 50 years

B: Low alcohol intake

C: Obesity

D: Male gender

Which of the following drugs is recommended for anti-emetic prophylaxis for a low emetic risk intravenous chemotherapy?

A Aprepitant

B Dexamethasone

C Lorazepam

D Palonosetron

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-549 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

SAFETY AND EFFICACY OUTCOMES OF A PHARMACY - MANAGED VANCOMYCIN DOSING AND MONITORING SERVICE

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Purpose: The increased usage of vancomycin has resulted in the emergence of methicillin - resistant Staphylococcus aureus (MRSA) with decreased susceptibility. Conventional dosing targeted trough levels of < 10 mcg/mL, but it is now recommended to dose vancomycin to achieve goal troughs of 15 - 20 mcg/mL for invasive MRSA infections. There are limited studies evaluating the safety and efficacy of targeting these higher troughs, and studies examining the risk for nephrotoxicity have shown conflicting results. A pharmacy consult service was implemented in 2011 at Louis Stokes Cleveland Department of Veterans Affairs Medical Center (LSCDVAMC) to ensure patients achieve target troughs of 15 - 20 mcg/mL. The implementation of this service led to patients achieving higher troughs, albeit within goal range. This study will evaluate the safety and efficacy of a pharmacy - managed vancomycin consult service and examine clinical factors associated with vancomycin - induced nephrotoxicity.□□Methods: This is a retrospective review comparing inpatients at LSCDVAMC who received vancomycin therapy during two time periods, pre - and post - consult initiation. Patients who received ≥ 3 days of vancomycin therapy and had ≥ 2 serum creatinine (SCr) levels were included. Patients receiving dialysis at baseline, those transferred to a non - medicine ward, and last documented SCr level > 6 months were excluded. Data collected includes demographics, indication, dose and duration of vancomycin therapy, renal function, trough levels, concomitant nephrotoxic medications, type of nephrotoxicity, length of stay, and mortality. Nephrotoxicity is defined as an increase in SCr of > 0.5 mg/dL or > 50% (whichever greater) for two consecutive results. □□Results and Conclusions: To be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current vancomycin dosing and monitoring guidelines, including the relevance of vancomycin pharmacokinetic properties.

Discuss the available literature evaluating vancomycin - induced nephrotoxicity.

Self Assessment Questions:

Which pharmacokinetic property is vancomycin dosing based on?

A Concentration > MIC

B: Time > MIC

C: Auc

D: Auc/mic

Which of the following is true regarding vancomycin - induced nephrotoxicity?

A It was very common when troughs < 10 mcg/mL were targeted.

B Recent studies show a definite positive association with troughs ≥

C Other clinical factors, such as receipt of IV contrast dye, may cont

D The guidelines do not recommend monitoring SCr in order to dete

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-550 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST-DIRECTED CONGESTIVE HEART FAILURE EDUCATION PROGRAM ON REDUCING 30-DAY RE-ADMISSION RATES

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PURPOSE: Congestive heart failure (CHF) has been identified by the Centers for Medicare and Medicaid Services (CMS) as a major contributor to excess rates of hospital re-admissions and healthcare expenditures. In 2012, CMS reduced payments to hospitals for patients re-admitted with CHF within a 30-day period. St. Joseph Mercy Oakland (SJMO) is among several institutions experiencing high CHF re-admission rates, which approached 26% in November, 2012. The discharge process and timely follow-up have been recognized as important targets for interventions. Since a significant portion of complications after discharge can be attributed to medications, pharmacists have an opportunity to provide education and assist with adherence issues that often lead to re-admissions. The purpose of this study is to determine if participation in a pharmacist-directed education program reduces 30-day re-admission rates for CHF patients at SJMO. □□

METHODS: This is a prospective, interventional study conducted from December, 2012 to March, 2013 of men and women at least 18 years of age with a diagnosis of CHF. Patients were excluded if they were discharged to an extended care facility, without telephone access, deaf, or known to have a psychiatric history. Upon obtaining the patients consent, the pharmacist provided education utilizing verbal and written materials. After hospital discharge, telephone follow-up occurred at 48 hours, one week, two weeks, and at 30 days. Any identified drug-related problems were addressed with the patients physician. Through a combination of education and tele-monitoring, a pharmacist-directed CHF program is expected to reduce 30-day re-admission rates at SJMO when compared to the current standard of care.□□PRELIMINARY RESULTS AND CONCLUSION: Results and conclusions to be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the CMS Hospital Re-admission Reduction program.

Define a CHF re-admission according to the CMS.

Self Assessment Questions:

What is the national re-admission rate for CHF?

A 10%

B: 35%

C: 15%

D: 25%

Re-imbursement penalties for early CHF re-admissions will take effect o

A November 4th, 2012

B January 1st, 2013

C October 1st, 2012

D April 14th, 2013

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-551 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF RAPID MOLECULAR TESTING OF GRAM POSITIVE BLOOD CULTURES ON ANTIMICROBIAL STEWARDSHIP WITHIN A COMMUNITY HEALTH SYSTEM

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Purpose: Blood stream infections (BSI) are associated with increased mortality rates, longer lengths of hospital stay, and higher hospital costs. Targeting antimicrobial therapy based on rapid bacterial identification has the potential to improve clinical outcomes. The purpose of this study is to determine whether the use of rapid molecular testing of gram positive blood cultures results in more timely initiation and adjustment of effective and appropriate antimicrobial therapy compared to traditional microbiology testing methods. This study also aims to determine whether the use of rapid molecular testing decreases length of hospital stay, total hospital costs, and antimicrobial medication costs compared to traditional microbiology testing methods. Methods: This study will consist of a retrospective chart review via electronic medical records and statistical analysis to assess the impact of rapid molecular testing of blood culture samples on antimicrobial usage, length of hospital stay, and hospital cost compared to conventional methods of gram stain and culture. Initial blood culture for each inpatient identified as gram positive will be tested with the rapid molecular testing method, Verigene BC-GP, and will be included. Exclusion criteria include blood cultures that yield only anaerobic growth or mixed organism growth, isolates identified as gram negative organisms, and age of less than eighteen years. The microbiology lab will immediately notify infectious disease clinical pharmacists of the molecular test result during weekdays or other designated clinical pharmacists on weekends. The pharmacists subsequently notify the prescribers to discuss appropriate antimicrobial therapy options when change is needed. Summary of (preliminary) results to support conclusion and conclusions reached: The study is still under investigation. Preliminary results will be presented during the Great Lakes Conference.

Learning Objectives:

Describe the advantages of rapid molecular testing methods for the identification of microbial species as compared to traditional methods.

Describe the potential impact of rapid molecular testing methods on antimicrobial stewardship.

Self Assessment Questions:

The use of various rapid diagnostic testing methods for the microbial identification of blood samples has been shown to:

A Provide clues as to the source of secondary blood stream infectior
B: Create extra labor for microbiology labs to implement these metho
C: Improve clinical outcomes, reduce hospital costs, decrease hospit
D: Result in no change in clinical outcomes or healthcare costs.

Patient EJ is empirically treated with vancomycin for gram positive BSI because his nasal MRSA PCR was positive. Two and a half hours later, the rapid molecular test reveals MSSA. Which of the follo

A More effective against MSSA as compared to cefazolin or nafcillin,
B Less effective against MSSA as compared to cefazolin or nafcillin,
C Similarly effective for treating MSSA blood stream infections comp
D Appropriate to continue in this patient because of his positive nasa

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-552 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACIST FACILITATED CULTURE REVIEW PROCESS IN THE EMERGENCY DEPARTMENT

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Purpose: Antimicrobial stewardship is an activity that includes the appropriate selection, dose, route, and duration of antimicrobial therapy with the primary goal of optimizing clinical outcomes while minimizing unintended consequences of antibiotic use such as toxicity or emergence of resistance. One core activity includes adjustment of antibiotics based on cultures and sensitivities. The goal of this study is t compare the time to patient notification of appropriate antimicrobial therapy between pharmacist reviewed and non-pharmacist reviewed cultures within the ED, assess the attitudes toward pharmacist facilitatec culture review in the ED from ED attendings and charge nurses, and compare the number of interventions between pharmacist reviewed and non-pharmacist reviewed cultures in the ED. Methods: Single-center, retrospective, chart review including patients discharged from the ED with positive culture and/or STDs results that have been reviewed by a clinical pharmacist versus the standard practice in the ED. A survey will be utilized to assess the attitudes of ED nurses and physicians regarding pharmacist services in relation to culture review and follow up. With a sample size of 172 (86 pharmacist facilitated vs. 86 non-pharmacist facilitated) this study will have at least 90% power to detect a time difference of 6 hours of time to patient notification of appropriate antimicrobial therapy. Descriptive statistics will be used to describe demographic, medical characteristic data, and will be used in the analysis of survey results. Results: Results are currently being compiled. Anecdotal data suggests that pharmacists have a positive impact on culture review within the ED. Conclusions: Positive outcomes for antimicrobial stewardship programs are well documented in the inpatient setting; however, many of these programs do not include ED patients in their initiatives. The purpose of this study will be to elucidate the impact of clinical pharmacy services in the ED in regard to culture review.

Learning Objectives:

Discuss the pharmacists role in bacterial culture review within the emergency department

Describe the impact of a pharmacist facilitated culture review process fo discharged patients in an emergency department at an academic medical center

Self Assessment Questions:

As reported in the literature in regard to bacterial culture review, pharmacists primarily had an impact on:

A Reduction on 30-day readmission rates
B: Reduction in the time to positive culture review and time to patient
C: Improvement in adherence to antibiotic therapy
D: Decrease in interventions compared to other health care personne

Pharmacist-facilitated culture review in the ED allows other health care personnel to:

A Better allocate their time to other responsibilities
B Take longer breaks
C Increase time for bacterial culture review
D Ignore culture review results

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-553 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EMERGING ANTICOAGULANTS AND THEIR BLEEDING COMPLICATIONS: AN OBSERVATIONAL STUDY AT A COMMUNITY TEACHING HOSPITAL

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Purpose: Dabigatran and rivaroxaban may cause bleeding complications. Currently, there are no FDA-approved specific antidotes to reverse these agents. The objectives of this study were to look at the number, types, and treatment of bleeding complications of patients on rivaroxaban or dabigatran. □□Methods:□This retrospective, observational study was submitted and approved by the Institutional Review Board. Patients enrolled in the study were 18 years and older with bleeding complications and were on rivaroxaban or dabigatran from January 2011 through February 2013. Exclusion criteria included women who were pregnant, breastfeeding, or lactating; patients with hepatitis B, hepatitis C, or human immunodeficiency virus; patients less than 18 years old, and patients with hypersensitivity to rivaroxaban or dabigatran. Patients with bleeding complications were selected by running a query of International Classification of Diseases Book Nine (ICD-9) codes derived from bleeding complications seen in previous studies of rivaroxaban or dabigatran. Coagulation parameters such as activated partial thromboplastin time (aPTT), prothrombin time (PT), international normalized ratio (INR), platelet count (PLT), hemoglobin (Hgb), and hematocrit (Hct) were collected along with renal and liver function. Targeted treatments that were analyzed included fresh frozen plasma (FFP), packed red blood cells (PRBC), factor VIIa, platelets, and cryoprecipitate.

Learning Objectives:

Explain recent literature assessing the reversibility of rivaroxaban or dabigatran

Describe the mechanism of action of dabigatran and rivaroxaban

Self Assessment Questions:

Based on current literature, which of the following monitoring tests is most sensitive to rivaroxaban?

A Activated Partial Thromboplastin Time (aPTT)

B: Prothrombin Time (PT)

C: Clotting Time (CT)

D: Thrombin Time (TT)

What is the mechanism of action of rivaroxaban?

A Inhibition of Thrombin

B Inhibition of Factor II

C Inhibition of Factor Xa

D Inhibition of Factor VII

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-750 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF ROCURONIUM ADMINISTRATION ON TIME TO TARGET INTERNAL BODY TEMPERATURE IN PATIENTS TREATED WITH THERAPEUTIC HYPOTHERMIA AFTER CARDIAC ARREST

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Purpose: Cardiac arrest accounts for approximately 300,000 deaths each year in the US, the majority secondary to neurologic injury. Lowering body temperature to 32C to 34C during the first few hours post cardiac arrest has been shown to reduce the risk of neurologic injury. Studies have shown that a shorter time to target temperature during therapeutic hypothermia correlates with improved neurologic outcomes. However, reaching target temperature rapidly predicts poor neurologic outcomes. Shivering during therapeutic hypothermia has deleterious effects; however, it can be negated by sedation and neuromuscular blockers. The objective of this study is to determine the effect of intermittent administration and continuous infusion of rocuronium on the time to target internal body temperature in patients treated with therapeutic hypothermia post-cardiac arrest.□□Methodology: This is a retrospective, single center, cohort study from November 2004 through January 2013 comparing the effect of intermittent administration and continuous infusion rocuronium on time to target temperature in patients undergoing therapeutic hypothermia post-cardiac arrest. After approval by the Institutional Review Board, patients were identified via billing records. Patients eligible for inclusion were those 18 years of age and older, and treated with therapeutic hypothermia post-cardiac arrest. Exclusion criteria included those with no documented initial temperature death prior to achieving target temperature, temperature less than or equal to 33C on arrival, failure to achieve target temperature, use of other neuromuscular blockers, or pregnancy. Data collection included demographic information, temperatures during therapeutic hypothermia process, cerebral performance category at discharge, rocuronium usage sedative usage, and cardiac arrest information. Patients were divided into three groups for analysis: patients receiving continuous infusion rocuronium, patients receiving intermittent rocuronium, and patients not receiving rocuronium. Patient identifiers were removed prior to data analysis to maintain confidentiality. □□Results and conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the recommendations regarding the use of therapeutic hypothermia in patients post-cardiac arrest.

Describe the role of neuromuscular blocker use in therapeutic hypothermia process.

Self Assessment Questions:

Which of the following post-cardiac arrest patients would likely benefit the most from therapeutic hypothermia?

A Out-of-hospital arrest; Asystole

B: Out-of-hospital arrest; Ventricular Fibrillation

C: In-hospital arrest; Asystole

D: In-hospital arrest; Ventricular Fibrillation

In post-cardiac arrest patients being treated with therapeutic hypothermia, neuromuscular blockers are primarily used to:

A Facilitate prolonged sedation

B Negate shivering

C Prevent seizures

D Reduce electrolyte abnormalities

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-554 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CARDIOVASCULAR RISK REDUCTION SERVICE IN A DIABETES CLINIC

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Background:□Cardiovascular disease (CVD) is the leading cause of death in patients with diabetes. Cardiovascular complications of diabetes include heart disease, stroke, kidney disease, and peripheral artery disease. Management of hypertension in patients with diabetes can reduce the risk of cardiovascular complications by 33-55%. Additionally, lowering low-density lipoprotein (LDL) cholesterol can reduce cardiovascular complications by 20-50%. □ □The American Diabetes Association (ADA) recommends a goal blood pressure (BP) of <130/80mmHg and a goal LDL of < 100mg/dl for patients with diabetes. Diabetic patients with hypertension should be treated with a either an angiotensin converting enzyme inhibitor (ACEI) or an angiotensin receptor blocker (ARB). Statin therapy should be initiated regardless of LDL in patients with diabetes with CVD or in patients without CVD over the age of 40 years with one additional risk factor for CVD.□□Per ADA guidelines, aspirin therapy should be initiated for primary prevention in patients with diabetes who have increased cardiovascular risk (men >50 years old or women >60 years old with one of the following risk factors: family history of CVD, hypertension, dyslipidemia, smoking, or albuminuria). □□Purpose:□The purpose of this study is to determine if implementation of a pharmacist-managed cardiovascular risk reduction service in a diabetes clinic will help patients attain their cardiovascular goals. □□Methods:□Subjects will be chosen patients currently referred to a diabetes clinic. Subjects will be included if they are aged ≥ 40 years with BP > 130/80mmHg at two clinic visits or LDL > 100mg/dl. Patients with an education plus medication management referral will be seen by a pharmacist for management of diabetes, hypertension, and hyperlipidemia. Patients with an education-only referral will be seen by a diabetes nurse and dietician for diabetes education.
□□
Results/Conclusion:□Results and conclusions will be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify factors that could increase cardiovascular risk in patients with diabetes.

Recognize the American Diabetes Associations cardiovascular goals for patients with diabetes.

Self Assessment Questions:

Which of the following is a risk factor for cardiovascular disease in a patient with diabetes?

A Family history of CVD
B: Dyslipidemia
C: Current smoker
D: All of the above

Which of the following is a cardiovascular goal for a patient with diabetes?

A Ldl < 130
B Bp < 130/80
C Bp < 120/85
D A1c < 7.5%

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-555 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

MEASURING THE IMPACT OF PATIENT DEMOGRAPHICS AND COMPLIANCE TO SEPSIS BEST STANDARDS OF PRACTICE ON IN-HOSPITAL MORTALITY

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Statement of Purpose:□Each healthcare institution varies in its effectiveness at treating septic patients and it is extremely difficult to determine which aspect of therapy is causing the largest reduction in mortality. Individual patient factors like age and severity of sickness may also play a role in prognosis. The aim of this research is to address what individual patient factor or aspect of treatment causes the largest impact on in-hospital mortality□□Statement of Methods:□Possible cases of sepsis will be flagged by clinical pharmacists in the MICU and ED. Each case will be screened for inclusion/exclusion criteria within 24 hours of initial presentation. Data collection will then be performed through chart review.□□Two types of confounders will be measured; patient demographic data and compliance to best standards of practice. Demographic data will include age, gender, height, weight, ethnicity, vital signs, partial pressure of carbon dioxide, white-cell count, lactate, anion gap, creatinine, blood urea nitrogen, location of origin (community to ED healthcare/long-term care facility to ED, another floor to MICU or already in MICU), time of diagnosis (AM, PM or Night), source of infection (pneumonia, urosepsis, peritonitis, line, other), APACHE II score, SOFA score, SAPS score, classification of severe sepsis or septic shock, any previous antibiotic exposure within 90 days, hospitalization for 2 days or more within the past 90 days, presentation from hospital/long term care facility, treatment in hospital of >5 days, hemodialysis within the past 30 days and recent home wound care or infusion therapy. Four areas of compliance will be assessed including fluid resuscitation, identification of infection source, antimicrobial therapy and hemodynamic control. Analysis will be performed to identify impact on mortality. □□Summary of Results:□Patient outcomes and pharmacist interventions remain under investigation, with data collection and evaluation currently being conducted.□□Conclusions:□There are currently no conclusions made at this point in research.

Learning Objectives:

Recognize patients who have sepsis based on specific clinical signs

Recall current interventions that have been shown to reduce sepsis mortality

Self Assessment Questions:

Which of the following would NOT be considered a sign of sepsis?

A Blood pressure < 100/80 mmHg
B: Possible source of infection
C: > 10% bands
D: PaCO2 < 32 mmHg

Of the following interventions, which has NOT been shown to reduce mortality

A The use of norepinephrine over dopamine as the first vasopressor
B Starting initial antibiotic therapy within six hours of diagnosis
C The use of steroids for refractory shock patients
D Fluid resuscitation to a goal central venous pressure of 8-12 mmH

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-556 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPLIANCE WITH DOCUMENTATION OF PRN INDICATIONS FOR MEDICATION ORDERS

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Purpose: The Joint Commission Medication Management (TJC MM) standard requires a documented indication of use for each medication. The standard directly applies to PRN medication orders and requires a policy as part of compliance. □□NorthShore University HealthSystem has a policy on medication orders which states an "indication for use of PRN and on call drugs must be qualified." The objective of this analysis is to determine the current rate of compliance with documenting an indication for PRN medication orders. This information will be used to formulate an algorithm to guide how to determine which PRN medicatior to use when multiple orders are available for different levels of the same indication. For example, medications indicated for nausea, vomiting, and constipation. □□Methods: A report consisting of medications ordered between October through December 2012 with a frequency type of PRN will be analyzed to determine compliance with TJC MM standard. The rate of inpatient medication orders reviewed by a pharmacist without an indication will be determined. The rate of orders with duplicate indications for individual patients will be analyzed in addition to consistency of documented indications for nausea, vomiting, and constipation. A task force consisting of pharmacists, nurses, and physicians will be formed to determine treatment algorithms for nausea, vomiting, and constipation. □□Results/Conclusion: Analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.□□Disclosures: The authors have no actual or potential conflict of interest in relation to this presentation.

Learning Objectives:

Review the Joint Commission Medication Management standard

Identify treatment algorithms for common PRN medications

Self Assessment Questions:

Patient A reports constipation to his nurse and the MAR has multiple PRN medications to treat constipation. What next step would be most appropriate?

A Nurse asks for the patient's preference

B: Nurse gives all PRN medications

C: Nurse contacts prescriber to clarify order

D: Both A and C

What are potential solutions to increase compliance to TJC MM standard?

A Hard stop on PRN orders without an indication

B Corporate policy on PRN medication orders

C Ordersets with administration instructions

D Both B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-751 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF A PHARMACIST-MANAGED VANCOMYCIN DOSING SERVICE IN OUTPATIENTS RECEIVING INTERMITTENT HEMODIALYSIS

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Purpose□Patients receiving intermittent hemodialysis (IHD) are at an increased risk of acquiring serious methicillin-resistant Staphylococcus aureus (MRSA) infections due to the presence of indwelling catheters, immune deficiencies, and high rates of MRSA colonization. Vancomycin is a glycopeptide antibiotic commonly used in IHD patients because of its broad gram-positive coverage and convenient dosing schedule when used in this patient population. Although there is mounting evidence that achieving specified vancomycin drug concentrations improves clinical outcomes, no universally accepted vancomycin dosing algorithm for use in patients receiving IHD currently exists. The objective of this study is to evaluate the outcomes of a pharmacist-managed vancomycin dosing protocol in outpatients receiving IHD.□□Methods□This observational, retrospective review included patients 18 and older who received at leas two doses of vancomycin within seven consecutive days as an IHD outpatient. The study period was September 2011 through February 2013. Data were collected and compared for patients treated before and after August 2012, when a pharmacist-managed vancomycin service was implemented. The primary outcome measure was percentage of pre dialysis vancomycin levels that fell within the predefined target range. Secondary outcomes included the percentage of time that the vancomycin dose was adjusted based on levels outside of the predefined target range, completion of documentation, and clinical outcome of vancomycin therapy. A treatment failure of vancomycin was defined as the need for catheter removal in catheter-related infections, admission to acute care for treatment related to current infection, the need for additional antibiotic therapy to treat existing infection, or death. Additional data collected included the number and doses of vancomycin received, timing and measurement of vancomycin levels, and pertinent patient characteristics.□□Results□Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the pharmacokinetics of vancomycin in patients receiving intermittent hemodialysis.

Explain the impact of a pharmacist-managed vancomycin dosing service in outpatients receiving IHD.

Self Assessment Questions:

Which of the following pharmacokinetic parameters is correct regarding vancomycin use in patients with end-stage renal disease receiving intermittent hemodialysis?

A The volume of distribution of vancomycin increases to ~5 L/kg

B: The half-life of vancomycin increases to ~20-25 hours

C: A 3 to 4 hours dialysis session with a high-flux dialysis filter reduce

D: Vancomycin pharmacokinetics are unchanged in intermittent hemo

Which of the following represents an outcome of the pharmacist-managed vancomycin dosing service in outpatients receiving IHD in this study?

A Improved clinical outcomes (decreased catheter removal, admissi

B Increased number of pharmacist interventions related to infection t

C Increased percentage of patients satisfied with their antibiotic dosi

D Increased documentation outlining indication, dosing history, interp

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-557 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

REDESIGN AND IMPLEMENTATION OF DISCHARGE MEDICATION PATIENT EDUCATION TOOLS AND MATERIALS

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Purpose: Successful transitions in patient care, especially from the inpatient to outpatient setting, require effective patient medication education. Patient misunderstanding of medication instructions have been identified as a root cause of outpatient medication errors and adverse effects. The rates of patient misunderstanding of common medication dosage instructions range from 8% to 33%. Patients with low health literacy have a statistically significant higher likelihood of misunderstanding medication dosage instructions compared to patients with high health literacy. The purpose of this project is to redesign and improve medication education materials provided to patients at discharge by achieving an increase in patients indicating agree or strongly agree in relation to the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) care transition questions following implementation. Methods: A literature review and gap analysis were conducted to identify patient education best practices and compare those practices to the medication education modalities at the University of Wisconsin Hospital and Clinics. A resident-led interdisciplinary workgroup was formed to identify appropriate redesign of the current discharge patient education materials to enhance patient satisfaction, understanding, and readability. Surveys will be distributed to patients both prior to and after implementation of the new materials. Patients will be surveyed for two weeks prior to implementation of the redesigned discharge patient education materials. The survey will gain a baseline patient satisfaction measurement with current education materials in addition to collecting patient scores of the proposed HCAHPS care transition questions. The redesigned materials and methods will then be piloted on two adult inpatient units for a period of two weeks and post-implementation surveys will be distributed. Results from the pre and post-implementation surveys will be compared. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the importance of providing discharge medication patient education.

Identify potential mechanisms for pharmacists to provide discharge medication patient education.

Self Assessment Questions:

What is the purpose of providing discharge medication patient education?

A It precludes medication patient education provided in outpatient ph
B: Discharge medication patient education is not needed
C: To increase patients' understanding of their medication regimen to
D: It is mandated by The Joint Commission

What are the mechanisms in which pharmacists can provide patient medication education in the inpatient setting?

A Smoke signals
B Verbal, written, and computer-based
C Carrier pigeons
D Telepathy

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-752 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTERDISCIPLINARY PREOPERATIVE PAIN MANAGEMENT PLANNING AND ITS EFFECTS ON POSTOPERATIVE OUTCOMES

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Background: Opioid usage in the US is increasing in prevalence. As a result, Meriter Hospital has seen an increase in patients who are on high dose opioids for chronic pain presenting for elective orthopedic surgery; these patients often present a challenge in pain management immediately postoperatively due to tolerance. The goals of treatment are adequate acute pain control and prevention of postoperative over sedation. Achieving these goals maintain patient safety as well as increase patient satisfaction. As HCAHP scores become increasingly more influential in hospital culture, pain management must become a focus for all providers. After internal examination, Meriter Hospital saw the need for better pain control in opioid tolerant individuals immediately postoperatively in the orthopedic population. Purpose: The purpose of this project is to develop and implement a multidisciplinary pain management group for Meriter Hospitals opioid tolerant orthopedic patient population to better manage postoperative pain complications. This study defines opioid tolerance as administration of 60mg oral morphine equivalents or more for at least 14 days. The primary goals are to demonstrate improvement in pain scores and to decrease time to stabilization in the postoperative recovery unit. Methods: Form an interdisciplinary team of pharmacists, anesthesiologists, surgical providers, and nurses to assess patients preoperatively and determine patients who are high risk for pain complications due to chronic opioid usage. After specific patients are identified, an interdisciplinary huddle will meet and form a patient specific pain regimen to be used postoperatively to better manage pain and sedation and thereafter increase patient satisfaction. Comparisons between a retrospective standard group and the prospective interdisciplinary huddle group will be made using patient reported pain scores and the time in minutes until patients are stable to be discharged from the postoperative recovery unit. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Explain the impact of a multidisciplinary perioperative pain management service for orthopedic patients with a known history of opioid tolerance

Describe the treatment advantages for patients when a perioperative pain plan is implemented prior to the surgical procedure

Self Assessment Questions:

A successful multidisciplinary perioperative pain plan for orthopedic patients on chronic opioids may:

A Cause a decreased emphasis on pain management HCAHP score
B: Provide a framework model for other pain management teams hos
C: Effect only those persons involved in the pain management team
D: Confuse patients by adding an additional group of practitioners wh

Patients with a history of opioid tolerance admitted for orthopedic surgery should be treated with:

A Oral opioids only to reduce abuse potential in the long term
B The opioid type they are on at home but in any form (Oral, IM, IV)
C Opioids for maintenance plus opioids, adjunct medications, and/or
D Short acting IV medications because these allow for withdrawal co

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-558 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF WITHDRAWAL FROM SEDATION IN THE PEDIATRIC INTENSIVE CARE UNIT

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Purpose: Prolonged exposure to sedatives often results in patients developing physical dependence, creating the potential for withdrawal symptoms to occur when the sedatives are discontinued. This is demonstrated in both adult and pediatric patients and research has shown that cumulative fentanyl doses of 2.5 mg/kg or a duration longer than nine days have been associated with a one hundred percent chance of developing withdrawal when weaned over two days in pediatric patients. The purpose of this study is to determine the incidence of withdrawal and identify contributing factors in the Pediatric Intensive Care Unit (PICU) at Peyton Manning Childrens Hospital at St. Vincent Hospital (PMCH). We plan to use these results to evaluate and possibly improve the sedation practices in the PICU at PMCH.□□Methods: This retrospective chart review evaluated the incidence of withdrawal from sedation in infants and children aged 0-18 years in the PICU at PMCH. Patients were identified if they received a continuous infusion of fentanyl, dexmedetomidine, or a combination of both fentanyl and dexmedetomidine for greater than seventy-two hours. Neonatal Abstinence Scores were collected for ten days following discontinuation of sedation or until the patient experienced withdrawal. Scores within six hours of extubation were discarded due to expected elevation in the withdrawal assessment scores due to agitation. Methadone and lorazepam use after discontinuation of sedation were also collected and evaluated for an effect on the incidence on withdrawal.□□Results/Conclusions: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define the differences between withdrawal, dependence, tolerance, and addiction

Identify pediatric patients at risk for developing withdrawal from sedation

Self Assessment Questions:

What is the definition of withdrawal?

A Chronic condition characterized by a complex pattern of behaviors

B: Physical signs and symptoms that manifest when a sedative or an

C: Decrease in the effect of a drug over time

D: Requirement of drug administration to function “normally”

A duration greater than _____ days of a fentanyl infusion is associated with an approximate 100% rate of withdrawal in pediatric patients when the fentanyl infusion is discontinued over 2 days.

A 5

B 7

C 9

D 12

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-559 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF ACTIVATED RECOMBINANT FACTOR VII (RFVIIA) IN ADUL CARDIOTHORACIC SURGERY

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Purpose □Despite a narrow FDA-approval, rVIIa is increasingly being used off-label to treat perioperative bleeding in patients undergoing cardiothoracic surgeries. Due to the cost and lack of evidence supporting its use, There is an unmet need to further assess the efficacy and safety of this agent in cardiothoracic surgery . The primary objective of this study is to determine if rFVIIa is effective at reducing blood transfusion requirements compared to usual care. Safety will be assessed by the co-primary endpoint of incidence of thrombosis during hospitalization. Secondary objectives include death, length of hospital/ICU stay, total cost of hospital stay, total chest tube output, operating room time, duration of mechanical ventilation, surgical re-exploration and other clinical outcomes. □□Methods □This is a retrospective cohort study of cardiothoracic surgery patients administered rFVIIa compared to those receiving usual care. Subjects aged 18-89 years who underwent a cardiothoracic surgical procedure requiring cardiopulmonary bypass at Community Heart and Vascular Hospital between January 2011 and August 2012 were included if they were administered at least one dose of rFVIIa during hospitalization. Patients with hemophilia A or B with inhibitors to Factor VIII or Factor IX acquired hemophilia, congenital factor VII deficiency, or who are prisoners or pregnant women will be excluded. These patients will be matched in a 1:1 ratio to other patients not given rFVIIa who also underwent cardiothoracic surgical procedures at the same institution. All clinical endpoints will be identified through review of the electronic medical records. Cost comparisons between groups will be made utilizing data from the hospital billing department.
□□
□
Results/Conclusions□Data collection is in progress and the results will be presented during the conference.

Learning Objectives:

Define the incidence of off-label usage of activated recombinant factor V

Describe the concerns associated with the off-label usage of activated recombinant factor VII for pharmacists

Self Assessment Questions:

What percentage of activated recombinant factor VII use is outside the FDA-approved indications?

A 37%

B: 57%

C: 77%

D: 97%

Recombinant factor VIIa use outside labeled indications is concerning for which of the following reasons:

A High cost if agent

B Limited efficacy data

C Potential for thrombotic effects

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-560 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSING THE EFFICACY OF APREPITANT FOR ACUTE AND DELAYED NAUSEA AND VOMITING FROM HIGH DOSE MELPHALAN IN MULTIPLE MYELOMA

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Approximately 45-65% of patients receiving high dose melphalan have nausea and vomiting despite receiving anti-nausea/vomiting medications. Aprepitant is FDA approved for preventing acute and delayed nausea/vomiting associated with moderately and highly emetogenic single day chemotherapy, in combination with corticosteroids and a serotonin receptor antagonist. The standard antiemetic regimen used for highly emetogenic multiday chemotherapy includes a corticosteroid and serotonin receptor antagonist, with complete response rates between 15-50%. Because patients still suffered from high rates of nausea and vomiting, studies began looking at the addition of aprepitant to the regimen. Currently, there is a lack of evidence and no clear guidance for antiemetic regimens for multi-day chemotherapy.□□Current practice at the University of Illinois Hospital and Health Sciences System for high dose melphalan therapy is ondansetron and dexamethasone before each dose of melphalan, then ondansetron daily for 3 days post melphalan administration. Prochlorperazine is used as needed. Currently, aprepitant is not routinely part of the antiemetic regimen. Owing to a lack of evidence, aprepitant is typically not used in hematologic malignancies. □□Our retrospective study is designed to compare the incidence of acute and delayed nausea and vomiting between patients treated with high dose melphalan on aprepitant versus no aprepitant. Patients diagnosed with multiple myeloma that received high dose melphalan 200 mg/m2 between January 1, 2000 and June 1, 2012 and received an autologous stem cell transplant will be included in the study. The primary objective of the study is to identify the incidence of acute and delayed nausea and vomiting. Secondary objectives include identifying risk factors for developing acute and delayed n/v and accessing the efficacy of antiemetic regimens in terms of use of rescue medication, length of hospital stay, duration on TPN, and rate of infection. Data collection and analysis are currently underway.

Learning Objectives:

Recognize the difference between acute and delayed nausea and vomiting.

Explain where aprepitant fits in the guidelines for antiemetic prophylaxis in multiday MEC and HEC regimens.

Self Assessment Questions:

High dose melphalan as an induction regimen for autologous stem cell transplant causes which type of nausea and vomiting?

A Acute
B: Delayed
C: Acute and delayed
D: None, it has low emetogenic potential

What is the current standard treatment per the NCCN guidelines for antiemetic prophylaxis of multiday MEC or HEC regimens?

A Dexamethasone + 5-HT3 receptor antagonist daily starting the da
B Dexamethasone + 5-HT3 receptor antagonist + aprepitant starting
C Dexamethasone + aprepitant starting the day of chemotherapy and
D Dexamethasone + prochlorperazine + aprepitant starting the day o

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-561 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING WEIGHT CHANGES ASSOCIATED WITH INITIATING INSULIN GLARGINE OR INSULIN NEUTRAL PROTAMINE HAGEDORN (NPH) IN TYPE 2 DIABETIC PATIENTS IN THE VA SETTING

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Background:□Treatment of type 2 diabetes is multi-faceted and includes lifestyle modifications and utilizing medications including oral agents and insulin. Although efforts may be made to avoid using insulin because of problems with patient acceptance, many type 2 diabetics will require insulin therapy due to inadequate control with other therapies. One of the barriers to the use of insulin is the concern for weight gain associated with treatment. Current literature has produced conflicting reports as to the overall changes in weight associated with the different basal insulin products available.□□Purpose:□The primary outcome of the study is to identify weight changes observed in patients initiated on insulin glargine or NPH after one year of therapy and determine if there is a significant difference between these groups. Secondary outcomes are to detect differences between HgbA1c values and the number of hypoglycemic events between the study groups, as well as assess whether there is a difference in any described outcome when patients are managed through a pharmacist-run clinic versus a clinic managed by another healthcare professional.□□Methods:□This is a retrospective chart review of type 2 diabetic patients at the Hines VA Hospital initiated on basal insulin therapy with either insulin glargine or NPH between 2010 and 2012. Patient charts will be reviewed for the following information: demographics, date and type of basal insulin initiated, weight and HgbA1c at baseline and after 12 months 3 months of basal insulin therapy, incidence of hypoglycemia during the one year review period, other medications that may affect weight started during the review period, diagnosis of CHF or cirrhosis, enrollment in other activities that may affect weight during the review period, and the provider responsible for diabetes management.□□Results/Conclusion: Data collection is in progress. Results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the pharmacologic and pharmacokinetic properties of the various insulin analogs.

Identify the proposed mechanisms for the development of weight gain as a result of insulin therapy.

Self Assessment Questions:

Which of the following is correct regarding timing of peak effect and expected duration of action for specific insulin options?

A Insulin NPH: peak – none; duration – 20-24 hours
B: Insulin NPH: peak – 4-12 hours; duration – 14-24 hours
C: Insulin glargine: peak – none; duration – 4-12 hours
D: Insulin glargine: peak – 4-12 hours; duration – 11->24 hours

Weight gain associated with insulin use may be related to the anabolic effects of insulin and which of the following?

A Defensive snacking in response to fear of hypoglycemic episodes
B Increase in energy loss through the urine
C Attenuation of insulin-evoked satiety leading to enhanced hunger a
D Both A & C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-562 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF HIGH-DOSE HEPATITIS B VACCINE VERSUS STANDARD-DOSE HEPATITIS B VACCINE IN AN HIV-INFECTED POPULATION

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Purpose: Compared to the general population, human immunodeficiency virus (HIV)-infected patients are at an increased risk of co-infection with hepatitis B virus (HBV). Hepatitis B is preventable through vaccination, and all HIV-infected patients who are HBV-negative need to be vaccinated. Because the efficacy of the vaccine is reduced in immunocompromised patients, multiple dosing strategies have been proposed in an effort to ensure adequate seroprotection. The purpose of this study is to evaluate the immunogenicity of high-dose hepatitis B vaccine versus standard-dose hepatitis B vaccine series within a multicenter, HIV-infected population. Methods: A retrospective randomized chart review will be performed evaluating subjects from the Indiana University Health LifeCare Program and the Wishard Health Services Infectious Diseases Clinic. Active clinic patients as of July 1, 2012 are eligible for review. Exclusion criteria include subjects who are less than eighteen years of age, pregnant or incarcerated at the time of review, and subjects with HBV co-infection. Only the primary vaccination series will be considered. The primary outcome is the rate of seroconversion following a standard (20g/dose) three-dose hepatitis B vaccine series compared to a high-dose (40g/dose) three-dose hepatitis B vaccine series as determined by anti-hepatitis B surface antigen (anti-HBs) titer levels. Secondary outcomes include a multivariate analysis to assess the relationship between immune function (CD4+ cell count and HIV viral load) and host factors (backbone of antiretroviral therapy (ART), history of opportunistic infection, history of acquired immunodeficiency syndrome (AIDS), months since HIV diagnosis, months since initiating ART, history of alcohol abuse, presence of hepatitis C virus co-infection, age, gender, and ethnicity) to vaccine response. We will also determine if the patient had been evaluated by an HIV clinical pharmacist prior to anti-HBs titer being drawn. Results/Conclusions: Results and conclusions of the study will be presented at the conference.

Learning Objectives:

Recognize patient populations in which vaccine response should be assessed by drawing anti-hepatitis B surface antigen (anti-HBs) titer levels.

Identify proposed strategies for improving hepatitis B vaccine response in HIV-infected patients.

Self Assessment Questions:

In which of the following groups of patients is it recommended and most appropriate to assess vaccine response by obtaining anti-hepatitis B surface antigen (anti-HBs) titer levels?

A Immunocompetent patients
B: HIV-infected patients
C: Pediatric patients
D: Patients ≥ 65 years

Which of the following is a proposed strategy to improve hepatitis B vaccine response rates in HIV-infected patients?

A Decrease the vaccine dose
B Decrease the number of immunizations
C Increase the vaccine dose
D Increase the time between vaccine doses

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-563 - L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A PHARMACY-INTEGRATED OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY (OPAT) SERVICE AT A COMMUNITY HOSPITAL

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Purpose: To integrate a pharmacist into the planning and monitoring stages of an existing OPAT service, and compare safety, efficacy and patient outcomes. Methods: This is a historical case-control study. Controls will be identified as those patients that received OPAT from 11/2011 to 10/2012 at the Day Hospital. To aid in identifying cases prospectively, a pharmacist will screen all adult patients on at least 3 days of intravenous (IV) antibiotics without an infectious diseases (ID) consult. For patients seen by hospitalists, the pharmacist will inquire about need for prolonged IV antibiotic therapy. Additionally, case management will be consulted to determine payment options for IV antibiotic administration at home or Day Hospital. For patients utilizing the Day Hospital for IV antibiotics, a pharmacist will review laboratory results and provide recommendations for changes to antibiotics and additional monitoring. The monitoring will be considered appropriate if it is in accordance with the recommendations by IDSA practice guidelines on OPAT, and goal vancomycin and aminoglycoside serum concentrations will be considered achieved if in accordance with the hospital guidelines. Results: During the retrospective study period identified above, there were 57 patients that used the Day Hospital for IV antibiotics. Of these, twelve patients lacked ID physician supervision. Only 25% of patients, without ID physician supervision had appropriate monitoring. Comparatively, 86.7% of patients with ID physician supervision adhered to IDSA recommendations. Furthermore, goal vancomycin and aminoglycoside serum concentrations were achieved in 60% of patients without ID physician supervision, versus 80% of patients with ID physician supervision. Results of prospective data and conclusions will be presented.

Learning Objectives:

Identify the potential advantages of an OPAT program.

List the role of a pharmacist in an OPAT team.

Self Assessment Questions:

What is a potential advantage of an OPAT program?

A Improved patient quality of life and satisfaction
B: Increased length of stay
C: Increased use of broad spectrum antimicrobials
D: Higher costs

Which of the following is a role of a pharmacist in an OPAT team?

A Optimal antibiotic dosing
B PO to IV antibiotic conversion
C Broad spectrum antibiotic selection
D Selection of the most expensive antibiotic

Q1 Answer: A Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-753 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF A CLINICAL DECISION SUPPORT SYSTEM DIRECTED TOWARDS CLINICAL PHARMACISTS TO IMPROVE TIME TO ANTIMICROBIAL ORDER CHANGES

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Purpose Antimicrobial stewardship is strongly supported by the Infectious Diseases Society of America and the American Society of Health-System Pharmacists. Stewardship programs aim to optimize appropriate antimicrobial therapy, decrease healthcare costs and decrease the potential for adverse drug reactions. Many hospitals have implemented electronic systems to assist healthcare professionals in limiting inappropriate antimicrobial use. The objective of this project is to optimize the use of antimicrobials by decreasing the amount of time to antimicrobial order changes, through the use of an alert within the health systems electronic system. Methods An active clinical decision support (CDS) system using an alert was implemented into the hospital database and pharmacists were trained on how it functions. The system was created to notify pharmacists when a microbial culture or polymerase-chain reaction (PCR) test was reported and a change in antimicrobial management should be considered. The three elements the CDS system alerts for include: positive blood culture results, all mecA results in non-blood isolates, and all Clostridium difficile PCR results. Once results have been reported for these three components, time to initiation, change, or discontinuation of an antimicrobial will be compared between pre- and post- implementation of the CDS system.

Results/Conclusions: Analysis of results is ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference

Learning Objectives:

Define three benefits of implementing antimicrobial stewardship programs at a hospital

State the three components pharmacists were alerted for by the CDS system

Self Assessment Questions:

Antimicrobial stewardship programs are beneficial because they:

A Decrease healthcare costs

B: Decrease development of resistance in patients

C: Decrease adverse drug reactions

D: A, b & c

The clinical decision support (CDS) system alerted pharmacists for all of the following EXCEPT:

A mecA gene

B Positive urine cultures

C Positive blood cultures

D Clostridium difficile

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-754 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF SULFONYLUREA CONTINUATION VERSUS DISCONTINUATION AFTER ADDITION OF PRANDIAL INSULIN IN TYPE 2 DIABETES

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Purpose The National Diabetes Fact Sheet from 2011 states that diabetes affects 25.8 million people in the United States of America. Guidelines recommend using oral hypoglycemic agents such as biguanides as first line in many patients with type 2 diabetes with sulfonylureas being a potential second line agent. As oral agents become insufficient, insulin therapy may be needed. The consensus statement from the American Diabetes Association and the European Association for the Study of Diabetes recommends discontinuation of sulfonylureas when prandial insulin is started. Current controversy exists on this recommendation and literature is scarce. The Veterans Affairs/Department of Defense Clinical Practice Guideline for the Management of Diabetes Mellitus has remained silent on this issue but many veterans who are on sulfonylureas as a second line agent due to their effectiveness and low cost may subsequently require insulin. The primary purpose of this study is to determine the effectiveness of discontinuation vs. continuation of a sulfonylurea when initiating prandial insulin by comparing changes in HbA1c, weight gain, and severe episodes of hypoglycemia. Methods A list will be generated including outpatients initiated on prandial insulin with subsequent discontinuation or continuation of a sulfonylurea from 1/1/2007 to 6/30/2012. The first 91 patients that meet the criteria in each group will be included as pilot data showed this sample size was necessary to detect a difference of 0.5% in HbA1c between the groups. Charts will be reviewed for the following information: patients clinic location and provider, sex, age, and race. HbA1c, weight, diabetes medications, and status of enrollment in the Managing Overweight/Obesity for Veterans Everywhere (MOVE!) program will be collected at baseline and at 3 to 6 months. Data on episodes of severe hypoglycemia will also be collected. Results and Conclusions Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the current recommendation for sulfonylurea use in combination with prandial insulin from the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) consensus statement.

Describe how sulfonylurea efficacy may relate to decline in pancreatic beta-cell function as diabetes progresses over time.

Self Assessment Questions:

What is the current recommendation from the ADA and the EASD consensus statement on sulfonylurea use when prandial insulin is added for the management of type 2 diabetes?

A Continue sulfonylurea when prandial insulin is added

B: Discontinue sulfonylurea when prandial insulin is added

C: Refrain from adding prandial insulin and continue a sulfonylurea in

D: Substitute a sulfonylurea for metformin when prandial insulin is ad

How is sulfonylurea efficacy thought to change as diabetes progresses over time?

A Increased efficacy due to increased pancreatic beta-cell function

B Increased efficacy due to decline in hepatic glucose production

C Decreased efficacy due to decline in pancreatic beta-cell function

D Decreased efficacy due to increased hepatic glucose production

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-564 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF VANCOMYCIN AND LINEZOLID PRESCRIBING BASED ON METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS RISK ASSESSMENT

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Purpose: Over the past two decades, there has been a gradual increase in methicillin-resistant staphylococcus aureus (MRSA) infections in healthcare facilities across the United States. Froedtert Hospital, however, has seen a reduction in both community-acquired and hospital acquired MRSA infection rates since early 2012. Despite this, our institution has seen use of agents to treat MRSA, including vancomycin and linezolid, increase over the past 12 months. It is unknown whether all patients initiated on these therapies are at true risk for MRSA and need these agents empirically. A review of current practice regarding MRSA risk assessment and subsequent antibiotic treatment choice will allow for improved patient outcomes and judicious prescribing of these agents. Methods: The current study is a single-center, observational, retrospective review evaluating current prescribing habits of vancomycin and linezolid based on MRSA risk assessment at an urban academic medical center. Approval was granted by the Institutional Review Board at the Medical College of Wisconsin. All Froedtert Hospital inpatients admitted between August 1, 2012 and September 30, 2012 who were newly initiated on either vancomycin or linezolid therapy for MRSA risk were included in the study. The primary outcome measure is to identify the percentage of patients initiated on vancomycin or linezolid as recommended by the 2005 Infectious Diseases Society of Americas Guidelines for treatment of infections caused by multi-drug resistant organisms. Secondary outcome measures include identifying the number of patients with a positive culture for MRSA as well as identifying trends in prescribing habits among various inpatient services.

Results/Conclusion: Data collection and analysis are currently being conducted. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the Infectious Disease Society of America's risk factors for the development of methicillin-resistant staphylococcus aureus related infections.

Describe the primary findings of this study and relate to the patient population at your own institution.

Self Assessment Questions:

According to the 2005 IDSA/ATS Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated pneumonia, which of the following is NOT considered a ri

A History of diabetes mellitus

B: Current hospitalization of 5 days or greater

C: Chronic hemodialysis within the last 30 days

D: Hospitalization for 2 or more days in the last 90 days

Linezolid is FDA indicated for the treatment of which of the following MRSA-associated infections?

A SSTI only

B SSTI and bacteremia

C SSTI and nosocomial pneumonia

D SSTI and infective endocarditis

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-565 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF A STRUCTURED INTERDISCIPLINARY APPROACH TO IMPROVING INPATIENT IMMUNIZATION RATES

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Purpose: The Centers for Disease Control and Prevention (CDC) recommends universal influenza vaccination of individuals six months or older and pneumococcal vaccination for adults greater than 65 and younger patients at higher risk of developing pneumonia. Working with the American Society of Health Systems Pharmacists Connect-Mentored Adult Immunization Impact Program (ASHPC-MAIIP), the intent of this study is to demonstrate the impact of a structured immunization process in increasing influenza and pneumococcal vaccination rates in the inpatient setting. Methods: A retrospective chart review study of medical records of adult patients admitted in the months of December 2011 and December 2012 were randomly selected for analysis. Five unique patient care areas of the hospital were included, with each area contributing 50 patient charts. Data collected included patient age, completion of immunization screening, appropriateness of screening, and final immunization status of the patient. A policy defining the immunization process was drafted and presented to the pharmacy and therapeutics committee. Nurses, pharmacists and pharmacy students were educated on the screening process, the goals of this program and other pertinent immunization education. Immunization reports were generated daily through the hospital computer system and assessed by a pharmacist for completion and accuracy. If deviation from the approved protocol occurred, interventions and education were provided to the appropriate nurse. A the conclusion of this intervention 50 post intervention charts were selected from patient care areas defined above to determine the impact of the immunization improvement program on immunization rates. The data collected will be utilized both at the facility level, and at the national level through the ASHP Connect Mentored Adult Immunization Program

Results/Conclusions: Data collection was completed in January 2013 and data analysis is ongoing. Final results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify disease states that make a patient part of the CDCs high-risk population for the pneumococcal vaccine.

Describe valuable outcome measurements for assessing the impact of an immunization program.

Self Assessment Questions:

CS is a 25 year old female who is part of the CDC high-risk vaccination population due to a diagnosis of _____.

A asthma

B: asplenia

C: obesity

D: A and B

Measuring the _____ is a feasible way to assess the impact a vaccine improvement program has made at a local level.

A reduction in invasive pneumococcal disease

B rate of vaccine adverse reactions associated with the pneumococc

C rate of pneumococcal vaccines in high risk populations

D none of the above

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-755 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

SINGLE VERSUS DUAL ANTIPLATELET THERAPY AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

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Purpose□The current standard for treating patients with high-risk acute coronary syndrome is the use of percutaneous coronary intervention (PCI) followed by dual antiplatelet therapy with aspirin and clopidogrel. However, 10-15% of patients are not candidates for PCI and require coronary artery bypass graft (CABG) surgery. Very limited data exists to recommend appropriate post-procedural antiplatelet therapy. Thus the purpose of this study is to assess the efficacy and potential toxicity of dual antiplatelet therapy (clopidogrel and aspirin) versus monotherapy (aspirin) in the post-procedural period in regards to in-hospital mortality, 30-day readmission rates, restenosis rates, ischemic or thrombotic events, and post-operative bleeding rates.□□Methods□Before initiation of research, the study was submitted and approved by the Western Investigational Review Board. The hospitals electronic medical record system was used to gather a list of all patients who received CABG-only surgery during the period of July 2009 through August 2012. This population was used to pair down patients who received either/or aspirin and clopidogrel. Patients were excluded from the study if clopidogrel had been used prior to the study or if therapeutic anticoagulation had been used directly after surgery. The following data will be collected: height, weight, BMI, age, race, gender, serum creatinine, number of bypass grafts, ejection fraction, statin use, smoking status, STS score, comorbidities, post-operative ICU of stay, in-hospital mortality, ischemic or thrombotic events, and bleeding events. All data will be recorded without patient identifiers and maintained confidentially. These data points will be used to assess the similarities between the two treatment groups as well as to determine the composite endpoint of in-hospital mortality, 30-day readmission rates, restenosis rates, ischemic or thrombotic events, and post-operative bleeding rates.□□Results and Conclusions□Data collection currently in process, preliminary results and conclusions to be presented.

Learning Objectives:

Describe the reasoning for dual antiplatelet therapy in coronary artery bypass graft surgery patients

Recognize the trends and differences between the two types of therapy

Self Assessment Questions:

Optimal CABG post-procedural anti-platelet therapy is best defined as

A Aspirin

B: Clopidogrel

C: Aspirin and clopidogrel

D: Limited data exists to recommend appropriate therapy

Why would dual anti-platelet therapy be beneficial in this patient population?

A Increased risk of bleeding

B Differing mechanisms of action in a pro-coagulable state

C Dual anti-platelet therapy has been proven more effective than vita

D Dual anti-platelet therapy is not beneficial in this population

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-566 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF HEPARIN IN OBESE PATIENTS

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Purpose: The aim of this study is to conduct a retrospective chart review to analyze patient data regarding the use of therapeutic heparin in obese patients. We will review the heparin dosing protocols of Saint Francis Medical Center (SFMC), focusing on their use in obese patients to assess the efficacy and safety of the current dosing regimens. A hypothesis to be tested is that therapeutic heparin dosing based on the current SFMC weight-based protocols with capped initial infusion rates is associated with sub-therapeutic anticoagulation in obese patients during the initial treatment days and adverse patient outcomes. □□Method: The study population is adult patients who have received therapeutic heparin therapy between March 2011 to March 2012. Patients over 18 years of age who have received a therapeutic heparin drip via SFMC protocol are included in this study. SFMC is currently using three types of weight-based heparin dosing regimens with initial infusion rate caps, each established for different indications: 1) General medicine protocol for DVT/PE, 2) Neurology protocol for stroke/TIA, 3) Cardiac protocol for ACS/A fib. Patients are assigned to 4 groups based on their weight (below 100 kg, 101-124 kg, 125-149 kg, and over 150 kg). Patient specific data to be collected include weight, heparin protocol, therapy indication, starting dose, time to therapeutic PTT, first therapeutic dose, receipt of blood product or protamine, and length of stay. □□Preliminary Results: Time to therapeutic PTT was delayed in the obese patient group. Length of stay was longer in the obese patient group. A greater number of patients in the lower body weight groups achieved therapeutic PTT on the starting infusion dose. A greater number of patients in the obese patient group failed to achieve therapeutic PTT within 24 hours post the initiation of heparin therapy.

Learning Objectives:

Review the heparin dosing protocols of OSF Saint Francis Medical Center, focusing on their use in obese patients to assess the efficacy and safety of the current dosing regimens for the obese patient population.

Discuss the association between current weight-based heparin dosing with capped initial infusion rates and subtherapeutic anticoagulation in obese patients during the initial treatment days, which can lead to adverse patient outcomes.

Self Assessment Questions:

Which of the below statements is true?

A In OSF Saint Francis Medical Center, three types of weight-based

B: Each heparin dosing protocols are established for different indicati

C: The initial heparin infusion rate is 18 units/kg/hour per Cardiac Pro

D: The therapeutic PTT range for a stroke patient is between 80 and

Which of the below is an example of patient outcomes caused by subtherapeutic heparin anticoagulation during the initial treatment days?

A Safe, conservative anticoagulation therapy

B Prolonged hospital stay

C Effective treatment and prevention of recurrent venous thromboem

D Bridge therapy with warfarin

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-567 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COLCHICINE FOR PREVENTION OF POST-OPERATIVE ATRIAL FIBRILLATION (POAF)

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Purpose□Atrial fibrillation is one of the most frequent complications afte cardiac surgery. Beta-blockers and amiodarone are effective therapies to reduce the incidence of post-operative atrial fibrillation (POAF). Colchicine as a single therapy in cardiothoracic surgery patients has als shown benefit. A newly developed protocol for the use of colchicine in addition to a beta-blocker to prevent POAF has recently been implemented at Northwestern Memorial Hospital for valve replacements and coronary bypass surgeries. Pharmacists and cardiac surgery nurse practitioners dose adjust colchicine in hepatic or renal impairment as well as for drug interactions with P-glycoprotein or CYP 3A4 inhibitors. The purpose of this study is to evaluate the newly developed colchicine protocol for the efficacy of colchicine in addition to a beta-blocker to prevent POAF. □□Methods□This will be a retrospective cohort study of cardiac surgery patients undergoing valve replacement or coronary bypass surgery at Northwestern Memorial Hospital who received a beta-blocker along with colchicine per the protocol from May 1, 2012 to December 31, 2012. The control group will be cardiac surgery patients who received a beta-blocker without colchicine during May 1, 2011 to December 31, 2011, prior to the initiation of the protocol. The primary end point will be the incidence of POAF at the first outpatient follow-up visit. Secondary endpoints will include the incidence and reasons for discontinuation of therapy, such as side-effects or non-compliance. This study has been IRB approved by Northwestern Memorial Hospital and Midwestern University.□□Results/Conclusions □Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe pharmacotherapy options to prevent atrial fibrillation after cardiac surgery

Review appropriate dose adjustment of colchicine for drug interactions and renal or hepatic impairment

Self Assessment Questions:

Which of the following statements is correct regarding atrial fibrillation after cardiac surgery?

A The incidence in valve surgery is 5%

B: The incidence in valve surgery combined with coronary artery bypa

C: The incidence increases with increasing age

D: The incidence occurs most often as a late complication after the fi

Which of the following statements is correct regarding colchicine?

A Colchicine is dose adjusted in renal and hepatic impairment

B Colchicine is an inhibitor of CYP3A4 isoenzymes

C Colchicine undergoes plasma esterase metabolism

D Colchicine does not depend on P-glycoprotein transport

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-568 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE APPROPRIATENESS OF MEDICATION MANAGEMENT IN PATIENTS DIAGNOSED WITH PERIPHERAL ARTERIAL DISEASE (PAD) AT THE CINCINNATI VA MEDICAL CENTER (CVAMC)

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PURPOSE: The purpose of this project is to evaluate the medication management of patients diagnosed with Peripheral Arterial Disease (PAD) at the Cincinnati VA Medical Center (CVAMC). Medical literature from the general United States population suggests that PAD is not well managed according to the guidelines. In addition, facility-specific, anecdotal evaluation of patients with PAD has shown that patients at the CVAMC might also be receiving suboptimal care. This study will determine the percent of patients with a diagnosis of PAD that receive appropriate preventive therapies according to the AHA guidelines.□□METHODS: The proposed study is a retrospective chart review, quality improvement study of patients with PAD performed at the CVAMC. Patients will be considered to have PAD if they have received an ankle-brachial index screening and have an index of <0.9. The database used for collecting all ankle-brachial indexes at the CVAMC wi be obtained from the CVAMCs vascular department procedural database for patient recruitment. Patients from this database with a diagnosis of PAD that meet inclusion and exclusion criteria will be randomly be selected for inclusion into the study. Patients that are indentified with PAD using ABI, from prior to January 11th 2013 will be assigned a coding number. Coding numbers will be entered into a randomization program which will randomly select the pre-determined number of patients. Additional patient characteristics will be collected via chart review. Patients will be evaluated for appropriateness of therapy, with appropriateness being defined as receiving any medication from each of the drug classes, or not receiving the medication due to a documented adverse drug event, allergy, or other reason documented in the medical record by the patients provider.□□RESULTS/CONCLUSIONS:□Results and conclusions of this study are still preliminary.

Learning Objectives:

Identify the three medication classes required for proper treatment of PAD according to the American Heart Association's guideline

Recall risk equivalents associtated with PAD

Self Assessment Questions:

According to the AHA guidelines, which of the following medications has not been shown improve outcomes for patients with PAD?

A Simvastatin

B: Atorvastatiin

C: Ramipril

D: Warfarin

Which of the following is PAD considered a risk equivalent?

A Hypertension

B Diabetes Mellitus

C Coronary Artery Disease

D Hyperlipidemia

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-569 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A DEFINED-FREQUENCY, WEIGHT-BASED VANCOMYCIN DOSING GUIDELINE IN HEMODIALYSIS PATIENTS

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Background: Vancomycin is a glycopeptide antibiotic used in the treatment of infections caused by various strains of gram-positive bacteria. Clinicians utilize drug assays to target a narrow range of serum vancomycin concentrations. Subtherapeutic levels have been shown to increase the risk of therapeutic failure and the emergence of resistant bacteria while elevated vancomycin levels can increase the risk of adverse effects such as nephrotoxicity and ototoxicity. Current literature provides a strategy that utilizes weight-based dosing to achieve optimal vancomycin trough levels in patients with normal renal function. Limited information is available on optimal maintenance dosing in hemodialysis patients. Mount Carmel Wests current guideline for maintenance doses in hemodialysis patients calls for administration of a vancomycin dose once a random trough level is less than 20 mcg/mL. The purpose of this study is to evaluate whether a defined-frequency, weight-based dosing regimen effectively maintains therapeutic levels with fewer levels compared to a dosing regimen with no defined frequency or dose.□□Methods: This is a single-center, retrospective cohort study comparing hemodialysis patients receiving vancomycin based on a defined-frequency, weight-based regimen and patients dosed using random vancomycin levels to determine the need for maintenance dose administration. Pregnant women, age less than 18 years of age, or weight greater than 150 kg are indications for exclusion. The primary outcome will be therapeutic levels for each dosing strategy. The secondary outcomes will include the number of vancomycin levels and the number of dose adjustments. Students t-test and Chi square analysis will be used to analyze data.□□Results/Conclusions: Data collection and analysis are in progress. Results and conclusions will be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize targeted vancomycin trough levels suggested by an expert panel for vancomycin therapeutic drug monitoring.

Describe the pharmacokinetics of intravenously administrated vancomycin.

Self Assessment Questions:

According to a consensus review, what is the minimum targeted vancomycin trough level to avoid the development of resistant bacteria in uncomplicated infections?

A >5 mcg/mL

B: >10 mcg/mL

C: >15 mcg/mL

D: >20 mcg/mL

What is the primary method of elimination for vancomycin following intravenous administration?

A conjugated for biliary excretion

B hepatic enzyme degradation

C in the urine as unchanged drug

D in the urine as metabolites

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-570 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF NARCOTIC USE FOLLOWING ADMINISTRATION OF INTRAVENOUS ACETAMINOPHEN

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Purpose:□□Narcotics have historically been the mainstay of intravenous post-operative pain control regimens, however there are inherent risks associated with their use. The Joint Commission issued a Sentinel Event Alert in August of 2012, warning of the risks of oversedation and respiratory depression associated with opioid use. Patients in the post-operative period are at increased risk of adverse effects. In 2011, an intravenous formulation of acetaminophen was approved in the United States, offering a novel non-opioid intravenous pain control option. Although narcotics continue to be utilized for post-surgical pain, cumulative narcotic use may be decreased with the addition of intravenous acetaminophen. This study aims to evaluate whether the use of intravenous acetaminophen reduces post-operative narcotic requirements following any type of surgical procedure.□□Methods □This is a retrospective case-control study evaluating all doses of intravenous acetaminophen administered at Rush University Medical Center between October 2011 and October 2012. Post-operative pain scores and cumulative narcotic use will be evaluated for the initial 48 hours following the surgical procedure. A second group of surgical patients who underwent similar procedures during the study period will be utilized as a case control. Adult patients (weight ≥ 50 kg) with creatinine clearance of 30 mL/min or greater who required any dose of narcotics for post-operative pain will be included in the analysis. Allergy to acetaminophen or narcotics, receipt pain medication within one hour prior to surgery or post-operative epidural or intrathecal pain control methods are indications for exclusion. The primary outcomes include: time to first narcotic dose, post-operative pain scores at 6, 12, 24, and 48 hours, and cumulative narcotic use at 12, 24, and 48 hours following surgery. Associated cost is a secondary outcome.□□Results: Data collection and analysis are ongoing; final results and conclusions will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

Identify the risks associated with opioid use in the post-operative period.

Describe the pharmacokinetic differences between intravenous acetaminophen when compared with other routes of administration.

Self Assessment Questions:

Which of the following is not a characteristic of patients who are at higher risk for oversedation and respiratory depression due to opioids as stated by the Joint Commission?

A No recent opioid use

B: Post-surgery

C: Longer length of time receiving general anesthesia during surgery

D: Chronic pain management with stable dose opioids

Administration of intravenous acetaminophen over 15 minutes results in

A Higher peak plasma concentrations when compared with oral or re

B Equivalent peak plasma concentrations when compared with oral

C Significant accumulation with repeated dosing

D Sedation and respiratory depression

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-571 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION AND OPTIMIZATION OF NEAR MISS REPORTING ASSOCIATED WITH THE FIVE RIGHTS OF BARCODE MEDICATION ADMINISTRATION (BCMA)

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Purpose: The purpose of this study is to evaluate near miss data in relation to right medication and report the findings to facilitate process improvements at an 800-bed tertiary care institution. Methods: This is a retrospective study evaluating barcode medication administration (BCMA) data from nine facilities in our hospital system from September to November 2012. After obtaining the data, the focus was narrowed to evaluate the largest facility, while further narrowing to focus on right medication near misses. The raw data elements include organization, nurse unit, application, alert date, alert type, alert user, alert user position, financial number, scanned barcode, parsed barcode, parsed barcode type, Cerner identification of product, Cerner identification type, order on encounter, order on person, dispensed identification order description, product, duplicate indication, medication administration alert identification. The data will be analyzed to identify near miss trends and provide a toolkit to help nursing and pharmacy leadership identify specific areas where process improvements or education is needed in order to prevent medication errors. Workflows will be assessed to identify processes that contribute to near misses. Results and Conclusions: Data collection is currently in progress and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define near miss and identify situations where a near miss might occur.

Describe the benefits of barcode medication administration (BCMA).

Self Assessment Questions:

A near miss might occur when:

A Scanning the correct patient's armband.

B: Scanning the patient's correct medication.

C: Administering the correct patient's medication.

D: Administering a medication not listed on the patient's profile.

Which of the following is a benefit of barcode medication administration (BCMA)?

A Electronic documentation of patient transfer

B Real-time electronic documentation of medications.

C Electronic documentation of patient discharge.

D Electronic documentation of home medications.

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-847 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF PROBIOTIC THERAPY ON THE DEVELOPMENT OF ANTIBIOTIC-RELATED CLOSTRIDIUM DIFFICILE-ASSOCIATED DIARRHEA (CDAD) IN HOSPITALIZED PATIENTS

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Background: Clostridium difficile-associated diarrhea (CDAD) has become a growing problem facing clinicians. Previous trials addressing the issue of probiotic therapy for the prevention CDAD have shown to be beneficial, but are of limited generalizability due to the small sample sizes, heterogeneous therapies, or exclusion of many important patient groups, specifically, patients who have recently received antibiotics prior to hospital admission. Puropose: The primary objective of this trial is to determine the effect of probiotic therapy on the development of CDAD in hospitalized patients regardless of previous antibiotic exposure

Methods: This is an interventional, prospective, double-blind, placebo-controlled, pilot study in a community hospital setting. Patients on high risk antibiotics (clindamycin, quinolones, cephalosporins, penicillins, and imipenem) were identified and randomized. Identity of allocation was hidden from the investigators until after completion of data analysis. The intervention group received a capsule containing Lactobacillus acidophilus, Bifidobacterium lactis, and Bifidobacterium longum twice daily while receiving antibiotics and for 7 days following antibiotic therapy. The placebo group received a similar-looking capsule (containing only maltodextrin) while receiving antibiotics and for 7 days following therapy. Diagnosis of antibiotic-associated diarrhea (AAD) was made upon development of 3 or more watery stools in a 24 hour period after initiation of antibiotic treatments. Stools that met criteria were then sampled and tested for C. difficile using polymerase chain reaction (PCR) assay. Study subjects were followed for 21 days after the intervention period to assess development of diarrhea and compliance. An on-treatment analysis of the rates of AAD and CDAD will be compared between groups, as well as the prevalence of proton pump inhibitor use, adverse effects, and other adverse outcomes. Results:

This study is still in the data collection phase. Preliminary results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify antibiotics or antibiotic classes that are associated with an increased risk of clostridium difficile associated diarrhea (CDAD)

Explain the potential mechanisms by which probiotics may be helpful in the prevention of CDAD

Self Assessment Questions:

Which of the following antibiotics is associated with the highest risk of developing CDAD?

A azithromycin

B: clindamycin

C: vancomycin

D: gentamycin

Which of the following is a potential mechanism exhibited by probiotics to help prevent CDAD?

A direct killing of c. difficile bacteria

B lowering local pH and replacing beneficial flora in the gastrointestin

C inactivating antibiotics in the gastrointestinal tract so c. difficile can

D phagocytosis of c. difficile spores

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-572 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A COMPARISON OF PHARMACIST-LED INTERVENTIONS DURING THE MEDICATION RECONCILIATION PROCESS ON ACCURACY AND PATIENT SATISFACTION AT A COMMUNITY BASED HOSPITAL

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Purpose: The purpose of this study is to compare the efficacy of each of three pharmacist-led interventions and the current nursing-led process for medication reconciliation in our facility for accuracy and patient satisfaction. Methods: An open randomized study design will be utilized comparing four methods of medication reconciliation in high-risk patients. For the purpose of this study, high risk is defined as patients greater than 65 years of age, currently taking over five prescribed medications or taking a high-risk medication and having multiple co-morbidities. Each patient will be randomly assigned to one of the four proposed study groups. Study Group A will consist of the pharmacist taking the patients medication history upon admission to the hospital. Study Group B will consist of the pharmacist taking the patients medication history upon admission, review the patients current medication profile, reconcile medications and answer any medication related questions upon discharge. Study Group C will employ the methodology used in Group B with the addition of two brief follow-up interventions at 72 hours and 4 weeks post hospital discharge. Study Group D will use the current nursing-led medication reconciliation process for admission and discharge. Information obtained regarding the patients current medication usage will be verified utilizing the patient the patients pharmacy, family members, and the primary care physician to construct an accurate and complete medication profile. The medication reconciliation process with the pharmacist will focus on medications deemed high risk and specific high-frequency disease states, such as diabetes. High-risk medications will include anticoagulants antiarrhythmics, anticonvulsants, insulin, narcotics, and sedatives. All study groups will receive a follow-up questionnaire assessing their satisfaction with the medication reconciliation process.

Results: The results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify tools and techniques to improve the medication reconciliation process and patient safety at a community based hospital.

Describe patients who are considered high-risk by disease state or being prescribed high-risk medications such as anticoagulants, antiarrhythmics or anticonvulsants.

Self Assessment Questions:

According to the Institute of Healthcare Improvement what percentage o medication errors occurred during hospital admissions, floor transfers and or hospital discharge?

A 30%
B: 40%
C: 50%
D: 60%

According to recent studies, during a patients hospital stay what piece o the medication reconciliation process caused the greatest number of errors?

A During the initial admission process
B During the final discharge process
C During the interaction with the patient's pharmacy
D During a transfer phase from floor to floor

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-848 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF DECENTRALIZED PHARMACY PRACTICE MODEL AND ELECTRONIC HEALTH RECORD SYSTEM IN A COMMUNITY HOSPITAL

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Purpose: Implementation of Pharmacy Practice Model Initiative has been studied at many large academic medical centers; however there are few reports of similar model changes at community hospitals. The objective of this project is to assess if the implementation of a patient-centered, decentralized, collaborative pharmacy practice model at a community hospital in conjunction with electronic health record application affects all cause 30-day readmission rates. Secondarily, disease specific 30-day readmission rates, patient satisfaction, and number of pharmacist interventions will be evaluated. Methods: This is a retrospective cohort study comparing data before and after decentralized pharmacy model and electronic health record implementation. Data will be collected from January to April of 2012 (before implementation) and July to October of 2012 (after implementation). The studied units include 2 intermediate care units, 2 telemetry units, and 2 medical surgical units. Readmission data from reports generated by a regulatory reporting agency will be categorized into specific disease states including chronic obstructive pulmonary disorders, acute myocardial infraction, pneumonia, and heart failure. All cause readmission data will be recorded. Patient satisfaction data will be collected from the Hospital Consumer Assessment of Healthcare Providers and Systems survey. Records of pharmacist interventions will be collected from intervention software and from the electronic health record. Data from the two time periods will be analyzed by the investigators to look for trends and relationships between readmission rates, pharmacist interventions and patient satisfaction. This study was approved by the institutional review board at Franciscan St. Margaret Health. Results/Conclusion: Data collection is ongoing. Final results and conclusions are to be presented at the Great Lakes Residency Conference.

Learning Objectives:

Explain the strategy of implementing a decentralized pharmacy model in a community hospital

Discuss the outcomes of a decentralized pharmacy model in a community hospital

Self Assessment Questions:

What is an initial step to implementing a decentralized pharmacy service in a community hospital?

A Analyze outcomes
B: Expand service to all units
C: Pilot the service in one unit
D: Increase the number of pharmacists in the central pharmacy

What is a main outcome measure that can be used to analyze a decentralized pharmacy practice model?

A Readmission within 1 year
B Number of pharmacist interventions
C Number of prescriptions upon discharge
D Total time pharmacy technicians spend in the central pharmacy

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-756 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF APPROPRIATE UTILIZATION OF STRESS ULCER PROPHYLAXIS AT AN ACADEMIC MEDICAL CENTER

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Purpose: Stress-induced ulcers are a form of hemorrhagic gastritis which develops within hours to days of major stressful events. Studies have shown that stress ulcer prophylaxis (SUP) can be inappropriately continued after hospital discharge and leads to increased costs. Moreover, pharmacological agents used for SUP have been associated with unwanted consequences, such as decreased absorption of calcium leading to osteoporosis, Clostridium difficile-associated diarrhea with long term use of proton pump inhibitors (PPI), and delirium with histamine 2-receptor antagonists (H2RA) use in elderly. Guidelines have been set in place at the University of Chicago Medical Center to optimize an evidence based approach to SUP guiding the indication, proper dosing and duration of SUP. The current study has been proposed in order to evaluate the appropriate utilization of SUP at the UCMC, before and after the implementation of SUP guidelines. □□Methods: This retrospective cohort review study will be performed in patients prescribed a PPI, H2RA or sucralfate admitted to the medicine service. It will include patients 18 years and older and the first hospital encounter. Two cohorts will be evaluated: before and after the implementation of SUP guidelines. Exclusion criteria include: diagnosis of GERD, gastrointestinal bleeding or ulcer and use of PPI or H2RA prior to admission. The primary objective is to determine if implementation of the SUP guidelines impacted the proportion of patients who received SUP with an appropriate indication on the medicine service. Secondary objectives are to evaluate the addition and/or deletion of SUP upon transition of care and to evaluate the appropriate indication for H2RAs or PPIs upon discharge. Two subgroup analyses will be performed to evaluate the use of SUP in each medicine service and to determine the proportion of patients diagnosed with C. difficile-associated diarrhea who received SUP. □□Results: to be presented □□Conclusion: to be presented

Learning Objectives:

Identify appropriate indications for initiation of stress ulcer prophylaxis as defined by the ASHP guidelines.

Discuss the risks associated with the pharmacological agents used for stress ulcer prophylaxis.

Self Assessment Questions:

What are appropriate indications for the initiation of stress ulcer prophylaxis?

A Mechanical ventilation for more than 24 hours

B: History of gastrointestinal bleeding or ulceration in the last two yea

C: Coagulopathy defined as platelets <50,000, INR > 1.5 or PTT > 2 :

D: Low dose steroid use

Which of the following are risks associated with the pharmacological agents used for stress ulcer prophylaxis?

A Clostridium difficile infection with long term use of proton pump inh

B Decreased financial cost with use after hospital discharge

C Delirium in the elderly with histamine 2 receptor antagonists

D Both A and C

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-757 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF MOMETASONE AND FORMOTEROL VERSUS BUDESONIDE/FORMOTEROL IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Purpose□In 2009, the FDA approved budesonide/formoterol for the long term maintenance of Chronic Obstructive Pulmonary Disease (COPD). The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines recommend the use of a combination of an inhaled corticosteroid and a bronchodilator for the improvement of lung function, reduction of exacerbations, and increased health status for patients with moderate to severe COPD. The guidelines dont differentiate between separate inhaler treatment or combination inhaler treatment. On August 1, 2011, a national contract for budesonide/formoterol went into effect, making it the preferred long acting beta agonist (LABA)/inhaled corticosteroid (ICS) combination on the Veterans Affairs National Formulary. Patients with COPD who were prescribed separate mometasone and formoterol inhalers, the previous formulary agents, were converted to budesonide/formoterol. The purpose of this study was to compare the rates of worsening of symptoms of COPD in patients before and after conversion. The primary outcome was the difference in rates of worsening of symptoms during the six months before the conversion versus the six months after conversion.

□□

Methods□Electronic medical records were used to identify patients with COPD who were prescribed budesonide/formoterol 160/4.5 mcg two inhalations twice daily. Patients with asthma or without six months of data were excluded. An extensive chart review was used to assess the comparative rates of worsening of symptoms for six months before and after conversion. A worsening of symptoms included at least one of the following: an urgent care visit or hospitalization for a COPD exacerbation, a prescription for an oral corticosteroid for respiratory symptoms, a change in inhaled COPD therapy, or a non-formulary request for a COPD medication. A rate of occurrence of worsening of symptoms per patient was calculated and analyzed using a paired t-test.

□□

Preliminary Results and Conclusion□Data analysis is ongoing. Preliminary results and conclusions are not available.

Learning Objectives:

Identify the proper use of combination therapy with a long acting beta agonist (LABA) and an inhaled corticosteroid (ICS) in the treatment of Chronic Obstructive Pulmonary Disease (COPD).

Recognize signs and symptoms that are indicative of an exacerbation of COPD.

Self Assessment Questions:

What benefit has not been seen with the use of inhaled corticosteroids for patients with COPD?

A Reduces the frequency of exacerbations

B: Improves respiratory symptoms

C: Slows the decline of forced expiratory volume in one second (FEV

D: Improves the patient's quality of life

Which of the following is not considered a cardinal symptom of a COPD exacerbation?

A Increased dyspnea

B Increased cough

C Increase in sputum volume

D Sputum purulence

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-573 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RELATIONSHIP BETWEEN VANCOMYCIN SERUM CONCENTRATIONS AND CLINICAL OUTCOMES AMONG CHILDREN WITH MRSA BACTEREMIA

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Background: Vancomycin is the first-line agent indicated for methicillin resistant Staphylococcus aureus (MRSA) infections. For the treatment o invasive disease, national consensus guidelines recommend targeting vancomycin serum trough concentrations of 15-20 mcg/mL for adult patients. Although relationships between vancomycin pharmacokinetic (PK) parameters and improved clinical outcomes have been established in adult populations, there is limited data describing the relationship of serum vancomycin concentrations and outcomes in children.

Purpose: To evaluate the impact of vancomycin serum concentrations on the clinical outcomes of children treated for MRSA bacteremia.Methods:This is a single-center retrospective analysis of children treated with vancomycin for MRSA bacteremia. The primary outcome is to describe the time to microbiological eradication as a function of three distinct PK parameters: (1) Initial trough concentraton, (2) whether a trough concentration ≥ 15 mcg/mL was obtained and (3) the ratio between the area under the concentration-time curve and the minimum inhibitory concentration (AUC0-24h/MIC). The secondary outcomes are to identify the relationship between initial vancomycin serum trough concentration and each of the following outcomes: time to defervescence and normalization of white blood cell count; duration of hospitalization and vancomycin therapy; and 30-day clinical status. Microbiology laboratory records were queried to identify 218 patients witl MRSA bacteremia between January 1, 2002 and July 31, 2012. Data were collected to describe patient demographics, comorbidities and to characterize details of infections, treatments, and clinical outcomes. A classification and regression tree analysis will be used to identify any PK parameters associated with differences in outcomes. Chi square or Fishers exact test will be used to compare outcomes between patients who attained a vancomycin serum trough concentration ≥15 mcg/mL and those who did not. Multivariate regression analyses will be performed to identify independent predictors of clinical outcomes.Results/Conclusions: Results will be presented upon project completion.

Learning Objectives:

Review the current guidelines for the use of vancomycin in the treatment of MRSA bacteremia

Explain the significance of recommended pharmacokinetic parameters for vancomycin

Self Assessment Questions:

A single vancomycin serum concentration drawn at which of the following times is most clinically useful?

A Three hours after dose administration

B: Immediately following dose administration

C: Immediately prior to the administration of the fourth dose

D: Immediately prior to the administration of the second dose

Which vancomycin serum trough concentration range is associated with improved clinical outcomes in adult patients with MRSA bacteremia?

A 15 to 20 mcg/mL

B 5 to 10 mcg/mL

C 10 to 15 mcg/mL

D > 20 mcg/mL

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-574 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF AN INPATIENT PHARMACIST CLINICAL WORKLOAD AND PRODUCTIVITY REPORTING SYSTEM

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Purpose:Pharmacist workload and productivity measurements can be reported as average time requirements, and can therefore over- or unde estimate time demands when changes in patient- or medication-order specific characteristics occur. To guide staffing decisions, more accurate measurement is useful for evaluating how such changes impact the amount of time pharmacists devote to common activities. The primary objectives of this project are to establish time standards for inpatient pharmacist clinical workload drivers, develop electronic reports to capture pertinent workload data, and create productivity measurement reports.Methods:Three inpatient pharmacist workload drivers have been selected based on a prior work sampling study. Direct observation time studies are being conducted for admissions and discharges to determine time standards for these workload drivers. A steering committee of inpatient pharmacists and managers has been formed to guide assessment of admission- and discharge-specific characteristics suspected to influence pharmacist time spent on these activities (examples of characteristics being investigated include the number of prior to admission medications, discharge disposition, and the number o new medications prescribed at discharge). Guided by the steering committee, time standards for admissions and discharges will be stratified; greater time standards will be assigned to admissions and discharges with characteristics predictive of greater pharmacist time requirements. Data from the electronic health record are being collected to allow similar stratification of medication order time standards based on characteristics determined by the steering committee to predict the length of time pharmacists spend assessing specific medication orders. Data for order entry, order verification, order modification, patient admissions, discharges, transfers, and patient-specific characteristics are being analyzed in a Microsoft Access database to generate productivity measurement reports that are customizable by patient care unit, service, time of day, and date range. This project has received Institutional Review Board exemption. Results/Conclusions: Data collection and analysis are ongoing.

Learning Objectives:

Describe two strengths and two weaknesses of utilizing electronic health records to drive clinical pharmacist workload and productivity reporting.

Discuss the implications of stratifying workload data by time requirements (complexity) in evaluating historical workload and productivity trends.

Self Assessment Questions:

Which of the following statements is TRUE regarding the use of electronic health records to report clinical pharmacist workload and productivity?

A Electronic health records standardize the reporting of pharmacist c

B: Electronic health records speed the collection of detailed workload

C: Electronic health records fully automate the collection of pharmaci

D: Electronic health records should not be used at all for assessing w

Which of the following statements best describes a key benefit of stratifying workload and productivity measures by complexity?

A Stratification more fully accounts for differences in pharmacist time

B Stratification in the presented report allows for direct comparison b

C Stratification using electronic health records allows for direct comp

D There are no benefits since pharmacists spend the same amount

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-758 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLICATIONS OF THE FIRST 48 HOURS OF SEDATION ON DURATION OF MECHANICAL VENTILATION IN MEDICAL INTENSIVI CARE UNIT PATIENTS AT A TERTIARY, ACADEMIC MEDICAL CENTER

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Purpose: Patients receiving mechanical ventilation (MV) may require the administration of sedatives and opioids to promote patient comfort and ventilator synchrony. The monitoring of pain, agitation, and delirium can be subjective and patients may experience undesirable outcomes due to variations in sedation assessment and drug administration. The study purpose is to characterize pain, analgesia, and delirium practice patterns in MV patients admitted to the medical ICU service and to determine if a single RASS of -4 or -5 is an independent predictor for prolonged MV.

Methods: This is a retrospective study to assess the current sedation practices in the first 48 hours of MV and the impact on duration of ventilator days for all mechanically ventilated adult patients admitted to the medical ICU service at the University of Chicago Medical Center from January 2012 to August 2012. Data points to collect include: sedative agents and doses administered, Richmond Agitation Sedation Scale (RASS) score, number of spontaneous breathing trials, spontaneous awakening trials, ventilator days, comorbid conditions, and the sequential organ failure assessment (SOFA) score will be collected. The primary objective will be analyzed using descriptive statistics. The secondary endpoints will be analyzed using descriptive statistics and univariate analysis and multivariate regression analysis, when appropriate. Currently, data collection is in progress.

Learning Objectives:

Recognize predisposing conditions that lead to utilization of sedation in patients that are mechanically ventilated

Describe the study methods and results to determine the effects of sedative drug titration on patient outcomes

Self Assessment Questions:

Which of the following statements is correct?

A Mechanical ventilation and medications are predisposing factors fo
B: Pain, agitation and delirium are not common in the ICU
C: Maintaining deep sedation leads to decreased ventilator days
D: ICU environment does not influence the patient's experience

Existing literature suggests that deep sedation within the initial 48 hours is associated with which of the following?

A Delayed extubation
B Increased mortality
C Decreased delirium
D Both A and B are correct

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-575 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANDING PHARMACISTS ROLE IN INPATIENT SERVICES

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The continued expansion of inpatient pharmacy services is essential to enhance patient care and to advance the profession of pharmacy. This project was designed to discover the merits of two new pharmacist roles in a multi-hospital health system and to ascertain which, if either, of these roles improved patient satisfaction, nursing satisfaction, and quality of care. The discharge counseling pilot was performed on a Medicine Telemetry unit. The identified patients were counseled on indications, common and serious side effects, monitoring, interactions, duration of therapy, and missed doses. Documentation of teaching was recorded as an intervention in the electronic medical record. Data was assessed using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores comparing the 3 months previous to the month of the pilot. A nursing satisfaction survey was distributed prior to the pilot and after the pilot had concluded focusing on pharmacy services. The new medication education pilot was performed on a Surgical/Medical Care unit. The pharmacist was responsible for all order verification, consults, and counseling patients on new medications. The pharmacist performed these duties while on the unit and was available for nursing interaction, answering medication-related questions, or addressing pharmacy issues. Documentation of teaching was recorded using an intervention in the electronic medical record. Data was assessed using the same modes as above. Both pilots were exempt for review by the Institutional Review Board as all patient interventions were educational in nature. Results of these pilots showed statistically significant improvement in overall nursing satisfaction for the discharge counseling pilot only. No differences existed in patient satisfaction or quality of care for either intervention. Conclusions drawn from this study were that our proposed interventions were not effective in improving patient satisfaction scores but did positively impact nursing satisfaction with pharmacy.

Learning Objectives:

Outline methods to expand pharmacists role in inpatient services.

Discuss optimal approaches to improve patient satisfaction.

Self Assessment Questions:

What area of pharmacy was the nursing staff most unsatisfied with according to pre-pilot survey results?

A Communication with pharmacy staff
B: Pharmacy education provided to patient
C: Medication availability
D: Overall satisfaction with pharmacy

Which of the following would have the most impact on HCAHP scores for new medication education?

A Pharmacist initiated counseling for medications the patient may be
B Nurse initiated counseling on all medications before they are given
C Pharmacy technician initiated counseling for new medications.
D Pharmacist performed admission medication reconciliation.

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-759 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE CLINICAL AND FINANCIAL IMPACT OF THE PHARMACIST-MANAGED DIABETES EMPLOYEE PROGRAM

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PURPOSE: Since its creation in 2001, Community Health Networks pharmacist-run employee wellness program, Bridges to Health, has provided its patients with one-on-one, personalized care focused on disease state education, preventative health, and medication counseling. In addition to the opportunity to meet regularly with a clinica pharmacist, the program also provides financial incentive for patients by offering copay waivers for medications and supplies through a network-based retail pharmacy. By providing this service, Community Health Network hopes to provide patients with the educational, motivational, and financial resources necessary to maintain optimal disease control. To date, there has been too little data collected to determine the impact of this service. The purpose of the study is to measure the impact that the Bridges to Health diabetes program has on both patient health and Community Health Network. □□METHODS: A retrospective chart review will be performed on all patients enrolled in the program between January 2006 and June 2011. To measure the impact of the program, reduction in hemoglobin A1C will be measured as the primary outcome. The study will compare patients A1C result from the year prior to enrollment to the last A1C result of each subsequent year that the patient has been enrolled. The following secondary outcomes will also be studied: low-density lipoprotein, blood pressure, body mass index, microalbumin to serum creatinine ratio, random microalbumin, changes in use of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, statins, and aspirin, and financial claims data. Data will be obtained from the electronic medical record and recorded in a spreadsheet using Microsoft Excel. Appropriate statistical analysis will then be performed on the data collected. □□RESULTS AND CONCLUSION: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the financial impact of diabetes in the United States.

Identify laboratory values recommended to be monitored in patients with diabetes by the American Diabetes Association.

Self Assessment Questions:

According to the American Diabetes Association, how many health care dollars are attributed to diabetes versus other health care costs in the United States?

A 1 in 35

B: 1 in 20

C: 1 in 10

D: 1 in 5

In addition to A1C monitoring, which of the following laboratory evaluations is recommended by the ADA as part of a comprehensive diabetes evaluation?

A Annual fasting lipid panel

B Random glucose

C Complete blood count

D Blood urea nitrogen

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-576 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF HOSPITALIZATIONS IN THE GERIATRIC PATIENTS WITH INCREASED DRUG BURDEN INDEX (DBI) AND ANTICHOLINERGIC RISK SCALE (ARS) SCORES

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Purpose: Senior patients have increased vulnerability to adverse drug events (ADEs), such as delirium, falls, and fractures.1 Approximately 30% of seniors taking five or more medications experience ADEs each year and 66% of these patients will require medical attention. 1 Older adults often take multiple medications for multiple disease states, with approximately 50% of senior adults using more than five medications.1 Older adults may also be more sensitive to the anticholinergic (AC) adverse effects of medications compared with the younger adult population and an estimated 27% of community-dwelling senior adults are taking medications with anticholinergic properties.1 Drug Burden Index (DBI) and Anticholinergic Risk Scale (ARS) are evidence-based tools used to quantify the cumulative anticholinergic and sedative effects of multiple medications.3,4 This analysis will evaluate the utility of DBI/ARS scores in relation to events requiring hospitalizations of senior patients at the Huntington VA Medical Center (HVAMC). □Methods: A retrospective chart review of patients admitted to the HVAMC with medication- related adverse events between January 1st 2009 and June 30th 2012 will be performed. The Drug Burden Index(DBI) and Anticholinergic Risk Scale (ARS) will be used to build a scale applicable to the Huntington VAMC formulary, with scores calculated for each admission. A regression model will be utilized to control for confounding variables. The primary endpoint will be relationship between total DBI/ARS scores and hospital admissions for falls, fractures, delirium, and/or mental status changes. The secondary endpoints will be the relationship between DBI/ARS scores and length of hospital stay and all cause mortality, in addition to changes made to medication therapy to decrease DBI/ARS scores prior to hospital discharge.□Results: Data is currently being collected and analyzed. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the adverse drug events associated with anticholinergic medications.

Identify medications that pose potential harm to elderly patients as a result of their anticholinergic properties.

Self Assessment Questions:

Which of the following medications has the least risk of anticholinergic side effects?

A Amitriptyline

B: Loratidine

C: Haloperidol

D: Olanzapine

Choose the ADR that is seen as a result of anticholinergic medications?

A Diarrhea

B Blurred vision

C Swelling

D Insomnia

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-577 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCREASING PRESCRIPTION CAPTURE IN THE CLINICAL CANCER CENTER MALIGNANT HEMATOLOGY AND BLOOD AND MARROW TRANSPLANT (BMT) CLINIC

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PURPOSE□Froedtert Hospital (FH) is a 550-bed academic medical center affiliated with the Medical College of Wisconsin in Milwaukee, Wisconsin. The Clinical Cancer Center (CCC) at FH is comprised of five clinics and 13 disease-specific teams which provide comprehensive cancer care. From these clinics, roughly 35,000 prescriptions are prescribed annually; 75 percent of the prescriptions are generated from the malignant hematology and BMT clinic (BMT) alone. Although FH has an outpatient pharmacy located within the CCC, as well as two other onsite outpatient pharmacies, data suggests that only 18 percent of prescriptions written in the CCC are captured by FHs outpatient pharmacies. □□This projects primary objective is to increase prescription capture by 18 percent from the BMT to FHs onsite outpatient pharmacies. A secondary objective is to assess the need for a second oncology pharmacist in this clinic. □□METHODS□Retrospective prescribing data from January 1, 2012 to March 30, 2012 was retrieved from the EMR. This information was reconciled against outpatient prescription processing information to determine the pre-intervention prescription capture rate. Additionally, a needs assessment was performed by way of an electronic survey of CCC staff to assess barriers and attitudes which may hinder prescription capture at FHs pharmacies. This survey will be used to gather feedback from prescribing providers in the BMT to ascertain what pharmacy services could be improved upon or better marketed. Information acquired from these surveys will be used to identify perceived gaps in pharmacy services and to formulate appropriate interventions to increase prescription capture. □□To justify a second pharmacist in the BMT, a database was developed to document and categorize pharmacist interventions from February 1 - March 1, 2013. This information will be utilized to formulate a business plan in the upcoming months. □□RESULTS/CONCLUSIONS□Other outcomes remain under investigation as data collection and evaluation are currently being conducted.

Learning Objectives:

Discuss why the malignant hematology and bone and marrow transplant clinic (BMT) was chosen as the focus of this project.

Describe the purpose of the needs assessment carried out in this projec

Self Assessment Questions:

What is the goal prescription capture rate at the completion of this project?

A 22%

B: 28%

C: 36%

D: 45%

What types of interventions will be tracked the by clinical oncology pharmacist in the BMT?

A Patient cost savings

B Patient education

C Treatment related

D B & c

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-760 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF ACUTE RENAL FAILURE IN THE COMMUNITY HOSPITAL

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Research-In-Progress Abstract□□Analysis of Acute Renal Failure in the Community Hospital□□Purpose: The purpose of this retrospective analysis is to evaluate Saint Joseph Regional Medical Centers rates of acute renal failure in patients receiving identified nephrotoxic agents. After rates of acute renal failure have been assessed in each agent, as well as in combination with other agents, the rates will be compared to attempt to target an agent responsible for the highest amount of acute renal failure.□□Methods: Patient encounters coded with the ICD 9 codes: 484.5, 484.6, 484.7, 484.8, 484.9 will be pulled from the system for evaluation by a SJRMC consultant. The total number of acute renal failure incidents will be compared with other rates of acute renal failure of other nephrotoxic agents. The agents and combinations compared are as follows: Vancomycin, Zosyn, Zyvox (for nephrotoxicity comparison), IV radiology contrast dye, Vancomycin + Zosyn, and Vancomycin + Zosyn + IV radiology contrast dye. We will use statistical analysis to evaluate this data. This study has been approved by the institutional review board at Saint Joseph Regional Medical Center.□□Results/Conclusion: Results for this project are still in process from our consultant; therefore, no conclusion can be definitively reached at this point in time.

Learning Objectives:

Identify agents or a combination of agents that have been proven in the literature to cause Acute Renal Failure.

Describe the mechanism of action of Vancomycin causing nephrotoxicity

Self Assessment Questions:

Identify the most nephrotoxic agent/combination of agents identified by this presentation.

A Vancomycin

B: Zosyn

C: Vancomycin + Zosyn

D: Vancomycin + Zosyn + Radiologic IV Contrast

Describe the mechanism of action of Vancomycin causing nephrotoxicity

A Exact mechanism remains largely unknown

B Intravascular dehydration

C Crystal Formation

D Decreased blood flow to the kidneys

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-761 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PHARMACY CONCIERGE SERVICE ON PATIENT SATISFACTION AND EDUCATIONAL METRICS

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Purpose To assess the impact of concierge-style, pharmacist-provided education on patient knowledge and satisfaction. Methods This is a prospective, randomized, controlled trial to evaluate the intervention of concierge-style pharmacist-provided education. Patients treated on an Internal Medicine unit at Henry Ford (HF) Hospital will be selected for inclusion if they have at least one of the four targeted chronic diseases (hypertension, diabetes, congestive heart failure, and chronic obstructive pulmonary disease), and will be excluded if they have a power of attorney, altered mental status, are pregnant, a minor, non-English speaking, or on contact precautions. Patients will then undergo stratified randomization into one of the four diagnosis categories. All patients will be approached by a pharmacist for an initial visit. In the control arm, this visit will consist of a baseline knowledge assessment and educational session on medications relating to the patients targeted diagnosis. In the intervention arm, the visit will consist of a baseline knowledge assessment and setting up a scheduled appointment for the educational session. The interventional pharmacist will then return at the mutually agreed-upon time to provide education about medications for the patients targeted diagnosis. Both groups will be approached again between 24 and 48 hours after their education was provided, in order to perform a follow-up knowledge assessment. The average change in percent questions answered correctly will be compared among the study and control population. Patient satisfaction will be assessed by HCAHPS scores, which will be compared with the scores of a similar internal medicine unit during the same time period. A subgroup analysis in those who receive care or have health insurance within the HF Health System will be included in a subgroup analysis to assess compliance. Results and Conclusions Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe a novel, concierge-style approach to pharmacist-provided, patient education.

Identify potential benefits of this novel approach.

Self Assessment Questions:

"Concierge-style" education means:

A Providing education relating to only medications which a patient as
B: Providing education after the patient has been discharged from the
C: Providing education at a time which has been identified and sched
D: Providing education in a written format that can be taken home fro

Potential benefits of concierge-style education which will be investigated include all of the following EXCEPT:

A Improvement in knowledge relating to targeted medications.
B Improved patient satisfaction with hospital services.
C Improved compliance with follow-up appointments and medication
D Reduced incidence of hospital readmission.

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-762 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CLINICAL PHARMACY SERVICES AND AMBULATORY INTERNAL MEDICINE PILOT: ASSESSMENT OF DRUG THERAPY RECOMMENDATIONS

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Purpose: Comprehensive medication therapy management involves assessing patients medications for appropriateness, effectiveness, safety, and adherence. Assessment of drug therapy recommendations and medication reconciliation discrepancies identified by a clinical pharmacist within an ambulatory general internal medicine department.

Methods: This is a retrospective pilot study which was submitted to the Marshfield Clinic Investigation Review Board prior to initiation. Up to 25(patients at least 18 years of age, with ten or more medications on record, and receiving a new or annual physical within General Internal Medicine at Marshfield Clinic are enrolled in the pilot. Non-English speaking patients are excluded. Pharmacists obtain a medication history from the patients one to two weeks prior to their scheduled appointment. Medication reconciliation discrepancies and drug therapy opportunities are documented according to type and frequency on a standardized form. The recommendations are shared with the provider and medical assistant the day of the patients appointment. Provider acceptance of recommendations is reviewed. Medication reconciliation discrepancies are placed in the following categories: unrecorded medications, recorded medications patient is not currently taking, and dose/frequency changes, including information on over to counter versus prescription medications. The drug therapy opportunities are categorized relating to indication, effectiveness, safety, and adherence. Descriptive statistics were utilized. Results/Conclusions: Data analysis ongoing results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the importance of medications therapy management and medication reconciliation within an ambulatory setting.

Explain the role of a clinical pharmacist in identifying drug therapy opportunities .

Self Assessment Questions:

According to the Patient Centered Primary Care Collaborative, which of the following is the most commonly identified drug therapy problem:

A Needs additional lab work
B: Inappropriate frequency
C: Needs additional drug therapy
D: Patient adherence

What percent of patients have at least one medication reconciliation discrepancy?

A ~ 99%
B ~ 75%
C ~ 50%
D ~ 25%

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-763 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF ACUTE RENAL FAILURE WITH CONCURRENT VANCOMYCIN AND PIPERACILLIN/TAZOBACTAM THERAPY IN PATIENTS WITH DIABETES AND/OR OBESITY

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Purpose:□□Antibiotic treatment of suspected or confirmed systemic infections frequently employs the combination of vancomycin and piperacillin/tazobactam (pip/tazo). While both vancomycin and pip/tazo have been independently associated with development of acute renal failure (ARF), anecdotal evidence and recent studies have suggested this combination synergistically increases the risk of developing ARF. As we continue to treat a growing population of patients suffering from diabetes and obesity, two conditions associated with impaired renal function, it is critical to understand if the use of antibiotic combinations such as vancomycin and pip/tazo may potentiate a decline in renal function in specific populations. Accordingly, we developed this study to determine if patients receiving concurrent vancomycin and pip/tazo who also have diabetes and/or obesity have a higher risk of developing ARF as compared to those patients receiving the combination antibiotic therapy who have neither condition. □□Methods:□□This is a retrospective chart review of patients hospitalized at Parkview Hospital and Parkview Regional Medical Center from 9/5/11 to 7/31/12 who received at least 48 hours of concurrent treatment with vancomycin and pip/tazo. Subjects will be evaluated for development of ARF while receiving combination therapy and within 30 days of receiving therapy, o as long as they are hospitalized. ARF will be defined as an increase in baseline serum creatinine of 50% or an increase of >0.5 mg/dL. Baseline serum creatinine will be defined as the most recent serum creatinine, during the hospital stay, prior to initiation of the antibiotics. The presence or absence of diabetes and obesity will be collected for all subjects. Patients will be excluded if they were <18 years old, had a history of chronic kidney disease, were receiving hemodialysis or did not have a serum creatinine level after initiation of the antibiotics.□□Results/Conclusions:□□Results/conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify medications that may increase the risk of nephrotoxicity while receiving vancomycin

Describe characteristics that have been recently associated with an increased incidence of ARF with the use of combination vancomycin and pip/tazo therapy

Self Assessment Questions:

The risk of vancomycin-induced nephrotoxicity may increase three fold with concomitant use of which of the following?

A Clindamycin
B: Fluoroquinolones
C: Aminoglycosides
D: Quinupristin/dalfopristin

Which of the following characteristics have been associated with an increased incidence of ARF in patients receiving combination vancomycin and pip/tazo therapy?

A Duration of combination therapy and patient age
B Hospital unit where antibiotics were initiated and number of nephro
C Hospital unit where antibiotics were initiated and number of additio
D Duration of combination therapy and number of additional antibioti

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-578 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MORBIDITY AND PROPHYLACTIC ANTIBIOTICS II GUNSHOT WOUNDS TO THE ABDOMEN WITH AND WITHOUT ASSOCIATED PELVIS OR SPINE INJURY

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Purpose□The purpose of our study is to evaluate if patients with abdominal GSW will have similar mortality and morbidity compared to patients with both a traumatic abdominal and pelvis or spine injury. Secondarily we will also examine if short-course prophylactic antibiotic therapy is as effective as long-course prophylactic antibiotic therapy in preventing infectious complications (meningitis and osteomyelitis) up to one-year post injury in patients with GSW to the abdomen and spine or pelvis. □□Methods□This single-center, retrospective, case-controlled study will include patients at UC Health - University hospital located in Cincinnati, OH. Patients will be identified using the 1990-2012 Trauma Registry. Two cohorts of patients will be identified: 1) patients with GSW resulting in only abdominal injury and 2) patients with abdominal and orthopedic injury. Patients will then be case-matched based on age, sex and Injury Severity Score (ISS) score. Patients with penetrating injuries to the small or large bowel with a corresponding orthopedic injury, will then be sub-divided into two groups, those who received: 1) short-course prophylactic antibiotic therapy for ≤ 48 hours and 2) long-course prophylactic antibiotic therapy for > 48 hours. Baseline demographics such as ISS, orthopedic injuries and intestinal injuries, and any surgeries performed will be collected through chart review. In addition, final disposition from the hospital, length of hospital stay, and length of ICU stay, if applicable, will be collected. Antibiotic specific data including choice, duration, dose, weight, and serum creatinine will be collected. Finally, adverse effects such as Clostridium difficile and allergic reactions to antibiotics will also be collected. □□Results□Data is currently being reviewed and collected; therefore no results are available. □□Conclusions□No conclusions can be made at this time

Learning Objectives:

Describe infectious complications following abdominal gunshot wounds with and without associated orthopedic injury.

Review prophylactic antibiotic literature following abdominal gunshot wounds with and without associated orthopedic injury.

Self Assessment Questions:

Of the following, which has been shown to be a risk factor for an infectious complication following an abdominal gunshot wound?

A Antibiotics (pre-op, intra-op, or post-op)
B: Hypertension
C: Severe fecal contamination
D: Decreased injury severity score

How long should prophylactic antibiotics be administered following fecal contamination of the peritoneum?

A 24 hours
B 48 hours
C 5 days
D 7 days

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-579 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VETERINARIANS' VIEWS ON COMMUNITY PHARMACISTS' ROLE IN DISPENSING AND COUNSELING ON PET MEDICATIONS

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Purpose Community pharmacists across the country can provide over-the-counter pet medications and pet prescriptions as a way to decrease cost, increase accessibility, and increase independence for pet owners. Pending legislation, the Fairness to Pet Owners Act, would require veterinarians to offer hard copy prescriptions to pet owners allowing them to use the pharmacy of their choice, creating a potential for an increase in pet prescriptions in the community pharmacy. The primary objective of this study is to examine veterinarians views of community pharmacists role in dispensing and counseling on pet medications. The secondary objectives include examining veterinarians obstacles in referring prescriptions to be filled in a community pharmacy, viewpoints on pharmacist training and education related to pet prescriptions, beliefs on the preparedness of community pharmacists to meet their clients needs, and opinions on specific products and services that veterinarians will look to the pharmacy to provide. Methods Between January 21, 2013 and February 8, 2013 a survey containing multiple choice and Likert scale questions was faxed to veterinarians in 200 veterinary clinics and hospitals in the greater Chicago region. Potential participants were identified using the Yellow Pages and a public membership directory of the Illinois State Veterinary Medical Association. Respondents were able to complete the survey via fax or at a designated website. Survey questions will collect veterinarians views on community pharmacists knowledge, pharmacists role in dispensing pet medications, and baseline demographic information. Surveys will be completed anonymously, with no personal identifiers. SPSS software will be used for data analysis. Preliminary Results In progress. Conclusion Results will assist in understanding veterinarians views of the role of community pharmacists in dispensing pet medications. By understanding these beliefs the community pharmacy practice will have the opportunity to improve relationships with veterinarians and increase referrals of pet owners to community pharmacies for their pet medication needs.

Learning Objectives:

Identify veterinarians beliefs on community pharmacists knowledge for dispensing pet medications accurately

Discuss areas in which community pharmacists can improve their relationships with veterinarians and increase referrals

Self Assessment Questions:

In a recent survey by the Oregon Veterinary Medical Association, veterinarians identified what as an area of opportunity for community pharmacists dispensing pet prescriptions?

A Knowledge of flea prevention methods

B: Knowledge of pet specific acetaminophen dosing

C: Decreasing cost of pet prescriptions

D: Knowledge of pet specific antibiotic dosing

For what reason(s) may pet owners decide to fill pet prescriptions in the community pharmacy setting?

A Decreased cost

B Increased accessibility

C Increased independence of pet owners

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-764 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

PIPERACILLIN-TAZOBACTAM VERSUS CEFEPIME FOR NEUTROPENIC FEVER: A PHARMACOECONOMIC STUDY

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Background:□□Neutropenic fever is a common complication of chemotherapeutic treatment in oncology patients, occurring in up to 80% of patients with certain malignancies. Mortality rates can exceed 20% in high risk populations, and the economic burden associated with the management of this condition is vast. Published guidelines from multiple organizations list both piperacillin-tazobactam and cefepime as appropriate monotherapy options for high risk patients. Several studies comparing piperacillin-tazobactam directly to cefepime for the treatment of neutropenic fever have found neither agent to be superior to the other However, studies are not available comparing the pharmacoeconomic outcomes between both agents for this indication. □□Purpose:□□The purpose of this study is to evaluate the total healthcare resource utilization for patients treated with either piperacillin-tazobactam or cefepime for neutropenic fever. □□Methods:□□This retrospective cohor study will include patients admitted between January 1, 2010 and November 30, 2012, who received either piperacillin-tazobactam or cefepime for the treatment of neutropenic fever. Eligible patients must be at least 18 years of age, hospitalized for the treatment of febrile neutropenia complicating the course of cytotoxic therapy for malignancy and have received either piperacillin-tazobactam or cefepime for at least 72 hours. Patients will be excluded if they received any antibiotics, other than those used prophylactically, in the 96 hours prior to admission. Patient-specific demographics and data, including lab values, vital signs and antibiotic therapy, will be collected. The primary outcome to be evaluated is the difference in total healthcare resource utilization between the two groups. Differences in total drug cost, collateral damage, adverse events, readmission rates, and overall mortality will also be evaluated. Data analysis will be completed using descriptive statistics and multivariate analyses. □□Results and Conclusions:□□Data collection and analysis are currently being conducted, and results will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the morbidity and mortality associated neutropenic fever and its impact on the healthcare system.

List the criteria used to define neutropenic fever.

Self Assessment Questions:

The average cost per admission for patients with neutropenic fever can often exceed:

A $5,000

B: $10,000

C: $15,000

D: $20,000

Which of the following is NOT one of the criteria used to define neutropenic fever?

A Infection identified by positive blood cultures

B Admission ANC <500 cells/mcL

C Admission ANC <1000 cells/mcL with the expectation that it will de

D Admission temperature >38.3 degrees Celsius

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-580 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

BARCODE MEDICATION ADMINISTRATION: MEDICATION ERRORS PRE-POST IMPLEMENTATION AND OBSERVED PATIENT SPECIFIC PREDICTORS OF WORKAROUNDS

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Purpose:□□Barcode medication administration (BCMA) implementation aims at decreasing medication administration errors and subsequently increasing patient safety. The utilization of workarounds in BCMA procedures and protocols nullifies the independent verification of both patient and drug thereby increasing the risk for medication errors. It is therefore important to understand and identify patient and environmenta predictors for BCMA workarounds.□□Methods:□□A single center, retrospective pre-post observational study was conducted to identify patient specific predictors for BCMA workarounds and to compare and contrast medication error rates before and after BCMA implementation. A workaround was defined as any nonstandard medication administration procedure used in place of standardized BCMA workflow. This study included all patients admitted to University of Cincinnati Medical Center in Cincinnati, Ohio during the study periods November 1st, 2011 to February 29th, 2012 and November 1st, 2012 to February 28th, 2013. Data collection was accomplished by way of computer generated retrospective reports for medication errors and BCMA scanning compliance. □□Patient specific predictors for workarounds were identified using a multivariate analysis and medication error rates were calculated by quantifying the number of administration related errors pre-post implementation and also by comparing administration related medication errors as a fraction of all medication errors reported.□□

Results:□□Data is currently being collected and reviewed.□□

Conclusions:□□Conclusions will be determined and presented at the Great Lakes Pharmacy Resident Conference once evaluation is complete.

Learning Objectives:

Describe the role of BCMA in the medication use system

Identify potential patient specific predictors for BCMA workarounds

Self Assessment Questions:

Which of the following is correct?

A BCMA prevents errors at most points in the medication use systen

B: The medication use system is functionally unrelated to BCMA.

C: BCMA may prevent errors originating during dispensing and admir

D: BCMA prevents medication errors outside of the medication use s

Which of the following are potential patient predictors for BCMA workarounds?

A Number of active medications

B Length of hospital stay

C Patient location

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-849 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF PHARMACIST-CONDUCTED TELEPHONIC MEDICATION RECONCILIATION AFTER PATIENT DISCHARGE FROM HOSPITAL TO HOME AS AN INTEGRAL PART OF A TRANSITION OF CARE (TOC) PROGRAM

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Purpose: When a patient is discharged from hospital to home, they are given discharge instructions that often times do not coincide with what they are actually taking or what may appear in their electronic medical record. These inconsistencies become an issue if a patient takes their medications incorrectly, and may result in serious adverse events, hospital readmission or potentially death. Discovery of issues associatec with medications post discharge can be identified through clinical pharmacist conducted medication reconciliation via the Transition of Care (TOC) program at Kaiser Permanente Foundation Health Plan of Ohio (KPOH). A lack of data currently exists indicating the effectiveness and impact of clinical pharmacist intervention in the TOC program within KPOH. How many and what types of issues clinical pharmacists are addressing is not clearly defined. The primary objective of the study is tc describe the average number of medication issues found per patient upon clinical pharmacist medication reconciliation. A secondary objective is to assess whether the issues were resolved. □□Methods: Data will be collected via retrospective chart review. Investigators will document number, type and level (patient, provider, system) of medication issues identified by clinical pharmacist, number of medications on patient discharge list, assigned risk score, if issues were resolved, and if patient was readmitted to the hospital within the specified range. Chart review will be conducted on KP members with an Ohio Permanente Medical Group (OPMG) provider discharged from a contracted hospital with a high-risk score ≥ 2 assigned by the inpatient care coordinator registered nurse between May 1, 2012 through July 31, 2012. In addition, an electronic survey will be sent to OPMG providers whose patients participated in KPOHs TOC program to assess physician satisfaction with the TOC program.□□Results/Conclusion: Full results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Outline the criteria used to assign a high-risk score as part of KPOHs transition of care program.

Define the term "medication issues" in the context of the TOC program within KPOH.

Self Assessment Questions:

A patient being discharged from a KPOH contracted hospital is considered to be at high-risk for readmission when:

A They have an assigned risk score of 1 or less

B: They have an assigned risk score of 2 or more

C: The patient has seven medications but no history of multiple disea

D: All patients are considered high-risk

Collectively, the following specific terms are used to capture the definition of medication "issues" in the context of KPOHs TOC program:

A Discrepancies and errors

B Errors and inconsistencies

C Discrepancies and mistakes

D Errors and inaccuracy

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-850 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

ACHIEVING TARGET PHARMACOKINETIC/PHARMACODYNAMIC PARAMETERS FOR VANCOMYCIN IN PATIENTS RECEIVING HIGH-FLUX HEMODIALYSIS

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Statement of purpose: The aims of this study are to determine the pharmacokinetic parameters for vancomycin, utilizing a weight based protocol in subjects receiving hemodialysis, to evaluate the pharmacodynamics by estimating the probability of target attainment with a range of MICs, and to determine a dosing regimen in hemodialysis that optimizes the pharmacodynamic parameters of the drug.□□Statement of methods: For the initial loading dose, subjects wil receive 20 mg/kg of vancomycin intravenously. After each dialysis session, a maintenance dose of 8-10 mg/kg will be administered. Blood samples for the determination of serum concentrations will be drawn 2-4 hours following the initial 20 mg/kg dose of vancomycin, prior to initiatior of the next hemodialysis session, 4-6 hours after completion of that hemodialysis session, and 2-4 hours following redosing with 8-10 mg/kg. Subjects receiving vancomycin for ≥1 week will have a repeat level drawn prior to the hemodialysis session 7 days after the initial loading dose to assess for drug accumulation. Pre-hemodialysis target concentrations will be 20-35 mcg/ml based on the distribution of typical vancomycin MICs. The range for target pre-hemodialysis concentrations were determined based on pharmacodynamic targets for a 24 hour area under the concentration-time curve divided by the MIC (AUC24/MIC) ≥400 for optimal clinical outcomes. Standard pharmacokinetic equations will be used to calculate the parameters of interest, which will include the following: area under the serum concentration-time curve, half-life, volume of distribution, renal clearance, and non-renal clearance. Based on this vancomycin dosing protocol, each subject will be evaluated for attainment of AUC24/MIC ≥400 and data from individual patients will be used to assess the probability of target attainment at a range of MICs.□□Summary of results: Results unavailable at the time of abstrac submission.□□Conclusions: Conclusions unavailable at the time of abstract submission.

Learning Objectives:

Identify the pharmacodynamic properties of vancomycin likely to be associated with clinical outcomes.

Recognize the correlation between AUC24/MIC, serum vancomycin concentrations, and MIC values.

Self Assessment Questions:

Which pharmacodynamic properties of vancomycin are likely to be associated with clinical outcomes?

A Peak: MIC and T>MIC
B: T>MIC and AUC24/MIC
C: AUC24/MIC and Peak:MIC
D: T>MIC and Peak:MIC

What pre-hemodialysis serum vancomycin concentration would be necessary to achieve AUC24/MIC ≥400 for an isolate with vancomycin MIC=2?

A ~25mcg/mL
B ~27mcg/mL
C ~30mcg/mL
D ~33mcg/mL

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-581 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRESCRIBING PRACTICES AND LIPID CONTROL AFTER THE FOOI AND DRUG ADMINISTRATION (FDA) SAFETY ANNOUNCEMENT REGARDING SIMVASTATIN AND GEMFIBROZIL

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Background/Purpose□Dyslipidemia is a major risk factor for developing coronary heart disease (CHD), which is the leading cause of death in the United States (US). The American Health Association states by 2030, costs related to CHD will rise to more than $1 trillion annually in the US. The 3-hydroxy-3-methlglutaryl coenzyme A reductase inhibitors, also known as statins, are proven to decrease the risk of cardiovascular morbidity and mortality and are recommended as first-line agents in reducing low-density lipoprotein (LDL). Patients requiring further triglyceride (TG) control may benefit from adding a fibrate, and the statin fibrate combination, specifically with gemfibrozil, was previously a common practice to achieve optimal control. Statins alone are generally well tolerated but, rare serious side effects can occur, such as myopathy, myalgia, and rhabdomyolysis. The potential for rhabdomyolysis with statin-fibrate use has increasingly been reported and documented. Therefore, in 2011 the FDA announced labeling changes for simvastatin, stating the use of simvastatin with gemfibrozil is now contraindicated.□□Methods□This study is an IRB and VA R&D Committee approved retrospective, electronic chart review of patients 18 years and older with active concomitant prescriptions for simvastatin and gemfibrozil at the time of the FDA safety announcement on June 8, 2011. Patients will be evaluated until the end of the study period on September 1, 2012. Patients are excluded if receiving other lipid lowering agents, prescribed lipid lowering agents by providers outside of the VA and/or have outside labs, taking gemfibrozil and simvastatin without a lipid panel during therapy, and/or taking gemfibrozil and simvastatin for less than 2 months. The primary outcome is the prescribing practice after the FDA safety announcement and the effect on LDL, TG, and high-density lipoprotein.□□Results□Data collection and analysis will be completed by April 2013. Final results with conclusions will be presented at the conference.

Learning Objectives:

Describe the FDA safety announcement regarding the concomitant use of simvastatin and gemfibrozil.

Discuss the safety concern regarding the concomitant use of simvastatir and gemfibrozil.

Self Assessment Questions:

The current FDA recommendation regarding the concomitant use of simvastatin and gemfibrozil is:

A Use with caution
B: Contraindicated
C: Monitor closely
D: First line therapy

The potential safety concern regarding the concomitant use of simvastatin and gemfibrozil, which lead to the FDA safety announcement in 2011, is:

A Myopathy
B Myalgia
C Rhabdomyolysis
D Abdominal pain

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-765 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

SOTALOL VERSUS AMIODARONE IN ATRIAL ARRHYTHMIAS: IMPACT OF RENAL INSUFFICIENCY AND EJECTION FRACTION

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Purpose: Sotalol is available as Betapace, for ventricular arrhythmias or Betapace AF, for atrial fibrillation/flutter. Both forms require dosing adjustments for patients with CrCl <60 mL/min. Betapace has dosing recommendations for dose adjustments when CrCl <10 mL/min, but Betapace AF is contraindicated when CrCl <40 mL/min. In clinical practice, sotalol for atrial fibrillation or flutter is often continued when CrCl declines below 40 ml/min. This study will compare mortality rates in veterans with reduced renal function on sotalol versus amiodarone (other major alternate) while controlling for structural heart disease.

Methods: The study has been approved by the Lexington VA IRB and R&D. This study is a retrospective chart review of patient data on patients admitted to the Lexington VA Medical Center and VISN 9 (VA Mid South Health Network) between February 2000 to July 2010 with the diagnosis of atrial fibrillation or flutter, a CrCl <60mL/min, and received either sotalol or amiodarone. VA Informatics and computing infrastructure will be utilized to facilitate data collection. Based on a previous study, approximately 3,000 patients are expected to be screened for our study and will allow the study to reach a power of 80% in order to detect a 15% difference in mortality. Categorical data will be analyzed by chi square test. Wilcoxon rank sum and student t-test will be used for continuous data analysis. A multivariate analysis using Cox proportional hazard regression and Kaplan Meier curve will be used to compare time to death among the two treatment groups. The propensity model will be used to adjust for differences between the sotalol and amiodarone groups. Once the propensity model is complete a sensitivity analysis will be run to evaluate the findings.

Results/Conclusions: To be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the difference in prescribing recommendations regarding renal function for Betapace and Betapace AF.

Describe the mechanism of action for both amiodarone and sotalol.

Self Assessment Questions:

What CrCl is Betapace AF contraindicated for use?

A <10 ml/min

B: <20 ml/min

C: <40 ml/min

D: <60 ml/min

In what class of antiarrhythmics is amiodarone categorized?

A Class I

B Class II

C Class III

D Class IV

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-582 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

A MULTIDISCIPLINARY TRANSITIONS OF CARE PROGRAM VERSUS STANDARD OF CARE IN OLDER ADULTS AFTER DISCHARGE FROM AN ACADEMIC MEDICAL CENTER

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Poor transitions of care have been identified as an area of weakness in the healthcare system leading to unnecessary utilization of healthcare resources. Transitions of care interventions using a multi-disciplinary approach and those that bridge care from the inpatient to outpatient setting have been shown to reduce hospital readmissions and healthcare utilization. We aim to describe the impact of a multidisciplinary post-discharge intervention involving a pharmacist, social worker, and physician on all-cause hospital readmissions and emergency department visits within 30 days of discharge from an academic medical center in older patients compared to usual care. Patients aged 60 and older discharged from an academic medica center between October 1, 2009 and December 31, 2011 will be included in the study. Patients not discharged home or had elective hospital admissions within 30 days of index discharge date will be excluded. Index hospitalizations will be defined as the first hospitalizatio within the study period. To maintain independent samples, hospitalizations after 30 days from the index discharge date will be excluded for patients with multiple hospitalizations. Intervention patients will be defined as those having completed pharmacist, social worker, and physician visits within 30 days of index discharge date at the geriatrics clinic. Using propensity scoring, patients will be matched 1:10, intervention to control, based on age, number of medications, and baseline comorbidities (based off Charlson-Deyo). Logistic regression will be used to test the effect of the intervention and covariates on the primary outcome, all-cause 30 day readmission rate. Secondary outcomes include emergency department visits, time to readmission, readmission length of stay, time to intervention, and effect of individual components of the multidisciplinary intervention. Data will be analyzed using IBM SPSS Statistics Version 20 and R version 2.12.1. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the threats poor transitions of care pose to healthcare quality and costs.

Describe the characteristics of most successful transitions of care interventions.

Self Assessment Questions:

Poor transitions of care may increase risk of what?

A Duplicative and unnecessary tests and procedures

B: Medication duplications, omissions, or dosing errors

C: Lack of follow-up on primary care and specialist visits

D: All of the above

Based on published literature on successful transitions of care interventions in older adults, ideal transition of care interventions are:

A Multidisciplinary

B Started while in the hospital and continue through till outpatient ca

C Unsuccessful if discharge planning, education, and outpatient sup

D All of the above are true

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-766 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXAMINATION OF THE POTENTIAL ERRORS FOUND IN HEALTH SYSTEM E-PRESCRIPTIONS

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Purpose: The purpose of the study is to identify the types of potential errors on e-prescriptions in a health system pharmacy and outline the patient safety implications of such errors. The primary outcomes of the study were to quantify the frequency in which a health system pharmacy receives e-prescriptions containing potential errors, to characterize the errors by type, and to quantify the proportion of ambiguous e-prescriptions that were recovered by pharmacists.

Methods: Electronically prescribed prescriptions that were prescribed to one health system pharmacy during a span of five days were used as the data for this project. Data extracted retrospectively from the archived records in the pharmacy software were considered medication, directions field, quantity and duration inconsistent, form/route inappropriate, or miscellaneous errors. A potential error was defined as any aspect of the e-prescription that was not explicitly clear as to the way the prescription was supposed to be filled or administered. Data was also collected regarding the final disposition of the e-prescription including whether it was deleted or changed per annotation.

Preliminary Results: Initial analysis showed potential errors in 10 (3.0% e-prescriptions from a total of 332 e-prescriptions sent to the health system pharmacy. The characterization of the types of errors from the initial analysis shows 60% to be directions field errors, 30% to be quantity and duration errors, and 10% to be miscellaneous errors. There were no medication or form/route inappropriate ambiguities. Pharmacy staff intervened on 60% of the errors based on deletion or annotation in the pharmacys prescription profile. Conclusions: Initial data suggests that the directions field errors appear to be the most frequent type of error. Addressing process improvement in directions field order entry may have the potential for the most impact to reduce potential errors and increase patient safety in the health system pharmacy.

Learning Objectives:

Identify the types of potential errors on e-prescriptions in a health system pharmacy.

Outline the potential patient safety implications of identified errors.

Self Assessment Questions:

Which of the following sets of classes/categories of medications contain all ISMP High Alert Medications in Community/Ambulatory Healthcare?

A Insulin, opioids, over-the-counter herbals, and antiretroviral medica
B: Insulin, opioids, pregnancy category X drugs, and antiretroviral me
C: Pediatric liquid medications that require measurement, opioids, an
D: Insulin, antihistamines (tablets and capsules), over-the-counter he

What would be the most reasonable suggestion for a pharmacist to try to save time while still providing safe patient care regarding e-prescription errors?

A Send a letter to each physician when prescriptions are unclear.
B Suggest providers create a hotline for pharmacies to call and clear
C Identify the most frequent types of ambiguities and implement proc
D Talk faster once they are speaking to the provider's office staff.

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-851 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF GLYCEMIC CONTROL IN THE NON-CRITICALLY ILL DIABETIC HOSPITALIZED PATIENT IN A VETERANS AFFAIRS MEDICAL CENTER

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Purpose: The American Association of Clinical Endocrinologists and American Diabetes Association (AACE/ADA) recognize that uncontrolled hyperglycemia in the hospitalized, non-critically ill patient is associated with a multitude of suboptimal outcomes including immune system dysfunction, metabolic derangements, and a wide variety of harmful vascular system responses. The primary objective of this study is to evaluate the current level of glycemic control in an acute, non-critically ill veteran population. The secondary objective will be to improve current practice by de-emphasizing sliding scale insulin as the sole means of glycemic control to better reflect AACE/ADA guidelines. Methods: The computerized patient record system will be used to identify non-critically ill type I or type II diabetic patients who, over a three month period of time, were admitted to a general medicine floor and had a length of hospital stay ≥3 days. Patients admitted with diabetic ketoacidosis, on systemic steroids, or admitted to the intensive care unit at any time during their hospital stay will be excluded from this study. The following data will be collected: patient age, gender, ethnicity, reason for admission, length of stay, diet status, fingerstick glucose readings, type of insulin regimen, and A1C assessment. The primary outcome will be the percentage of glucose fingersticks >180 mg/dl. Secondary outcomes will be the percentage of insulin regimens utilizing only sliding scale insulin and the percentage of patients without an A1C assessment in the last three months. These data will then be used to propose adjustments to current glycemic management protocols to better reflect AACE/ADA guidelines. Results/Conclusions: Data collection and analysis are currently ongoing. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the suboptimal patient outcomes associated with uncontrolled hyperglycemia in the hospitalized patient.

Identify an appropriate subcutaneous insulin regimen for a non-critically ill hospitalized patient.

Self Assessment Questions:

Uncontrolled hyperglycemia in the non-critically ill hospitalized patient is associated with which of the following:

A Immune system dysfunction
B: Increased infection rate
C: Increased length of hospital stay
D: All of the above

Component(s) of an effective subcutaneous insulin regimen for hospitalized patients include:

A Basal insulin
B Nutritional insulin dose
C Correction (supplemental) dose
D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-583 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARATIVE VARIABILITY OF MID-INTERVAL AND TROUGH VANCOMYCIN SERUM CONCENTRATIONS

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Purpose: The purpose of this project is to compare the consistency of steady-state midpoint (Cmid) and minimum (Cmin) serum vancomycin concentrations (SVC) in patients treated with vancomycin over a range of renal function and dosing schedules. Background: SVC area-under-the-curve (AUC) to bacterial minimum inhibitory concentration (MIC) ratio is suggested as the key pharmacodynamic parameter correlating to an increased likelihood of clinical efficacy. Guidelines suggest using Cmin SVCs as a surrogate marker for AUC. Therefore, Cmin SVC is routinely used in clinical practice to make vancomycin dose adjustments. However, published reports imply wide variability in Cmin for a given AUC. AUC is a function of daily dose and clearance, whereas Cmin SVCs may be influenced by clearance, half-life, and dosing interval. As a result, the routine use of fixed Cmin SVCs to adjust dosing regimens across a variety of patients may lead to inappropriate dose adjustments and poor clinical outcomes. Alternatively, Cmid SVCs closely approximate the average SVC (and thereby AUC) and are unaffected by differences in half-life or dosing interval. Additionally, Cmid SVCs offer a simple means to adjust the daily dose to achieve the desired AUC. Methods: This project is a prospective comparison of Cmid and Cmin SVCs. Vancomycin regimens in all patients are calculated and monitored by pharmacists. The Cmid and Cmin SVCs within a single dosing interval will be drawn in 50 patients on vancomycin. The patients will be selected to represent an even distribution across a range of creatinine clearances (greater than 20 ml/min). Cmin and Cmid SVCs will be compared via simple linear regression. In addition, Cmin and Cmid SVCs will be used to calculate the 24 hour AUC, and both Cmin and Cmid will be regressed versus calculated AUC. Results: Results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the advantages of monitoring vancomycin midpoints compared to troughs.

List the potential drawbacks to monitoring minimum (trough) vancomycin concentrations.

Self Assessment Questions:

Which of the following statements regarding monitoring midpoint serum vancomycin concentrations (Cmid SVC) is false?

A Midpoint concentrations provide the clinician with ample time to ad
B: Monitoring midpoint concentrations is more cost effective than trou
C: Midpoint concentrations provide a more consistent measure of ser
D: All of the above

Which of the following is true regarding vancomycin trough serum vancomycin concentrations (Cmin SVCs)?

A Vancomycin troughs directly and accurately measure the area-unc
B Vancomycin troughs are highly influenced by interpatient variations
C Vancomycin troughs are easier to coordinate between nursing, pha
D All of the above

Q1 Answer: B Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-584 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING THE APPROPRIATENESS AND COST EFFECTIVENESS OF EPOETIN ALFA VERSUS DARBEPOETIN ALFA IN THE TREATMENT OF CHEMOTHERAPY INDUCED ANEMIA IN AN OUTPATIENT SETTING

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Purpose: Erythropoiesis stimulating agents (ESA) significantly reduce the need for blood transfusion among patients with chemotherapy induced anemia (CIA). Epoetin alfa and darbepoetin alfa are currently approved by the FDA for CIA at the following recommended doses: epoetin alfa 40,000 units (U) subcutaneously (SubQ) weekly or 150 U/kg SubQ thrice weekly, darbepoetin alfa 500 micrograms (mcg) SubQ every three weeks or 2.25 mcg/kg SubQ weekly. Alternative regimens recommended by the National Comprehensive Cancer Network (NCCN) include darbepoetin alfa 100 mcg SubQ weekly, darbepoetin alfa 200 mcg SubQ every two weeks, darbepoetin alfa 300 mcg SubQ every three weeks, epoetin alfa 80,000 U SubQ every two weeks, or epoetin alfa 120,000 U SubQ every three weeks. As these medications have been proven to have positive outcomes with respect to resolution of CIA, the monetary expense of these agents continue to financially burden the health care system. The primary focus of this study is to assess the appropriateness of ESA use with respect to indication, dose, and laboratory markers as well as the economic benefit of epoetin alfa versus darbepoetin alfa among patients with CIA in an outpatient setting. Methods: A retrospective drug utilization evaluation was conducted to assess the appropriateness of ESA therapy with respect to indication, dose, hemoglobin, and iron studies. The outpatient electronic medical record system was utilized to identify patients who, over a one year period of time, have received at least one dose of epoetin alfa or darbepoetin alfa for the treatment of CIA. This information was coupled with financial data that compared ESA medications. This research initiative was approved by the appropriate ethics committee and informed consent was obtained for all subjects if necessary. Results: Data collection and analysis is in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Report the economic benefit of epoetin alfa versus darbepoetin alfa among patients with CIA in efforts to reduce this institutions outpatient clinic medication expenditures.

Report the appropriateness of erythropoiesis-stimulating agents (ESA) with respect to indication, dose, and laboratory markers.

Self Assessment Questions:

Which of the following parameters should not be assessed when evaluating the appropriateness of erythropoiesis-stimulating agents (ESA)?

A Hemoglobin
B: Weight
C: Iron Studies
D: Renal and hepatic function

Which of the following dosing regimens is not recommended by either the Federal Drug Administration (FDA) or the National Comprehensive Cancer Network (NCCN)?

A Darbepoetin alfa 2.25 mcg/kg subcutaneously every week
B Darbepoetin 300 mcg subcutaneously every three weeks
C Epoetin alfa 150 units/kg subcutaneously three times weekly
D Epoetin alfa 40,000 units subcutaneously every three weeks

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-585 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST ROLE IN THE EARLY TREATMENT OF SEPSIS

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Purpose: The purpose of this study is to evaluate Froedtert Health Community Memorial Hospitals (FHCMH) compliance with the current Surviving Sepsis guidelines. After evaluating the initial data we will identify possible changes that will help streamline the current processes. Methods: This is a retrospective study. All the data is collected using electronic medical records. All patients from July 1, 2012 to June 30, 2013 diagnosed with sepsis at FHCMH will be included in this study. Patients <18 years of age will be excluded. We will be recording the following: Demographic information, admitting diagnosis, cause of sepsis, date of admission, origin of patient, time order was placed, time order verified, time medication was charted as given, antibiotic(s) used, if first dose given as a loading dose (if applicable), if broad spectrum antibiotic was given first, mortality during current admission, if ED sepsis order set used. The primary goal of this study is to begin treatment with antibiotics < 1 hour from time of sepsis diagnosis. Secondary goals are to make certain that the first dose of antibiotic(s) are given as a loading dose (if applicable) and if multiple antibiotics are ordered that they are given in a logical order (broad to narrow spectrum). Results/Conclusions: Data collection and analysis is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the current literature available regarding the benefits of timely administration of antibiotics in patient diagnosed with sepsis.

Discuss the role of pharmacy in the prompt treatment of sepsis.

Self Assessment Questions:

The guideline recommends that intravenous (IV) antibiotics be started:

A <3 hours of diagnosis/recognition

B: Only after cultures have been drawn

C: <1 hour of diagnosis/recognition

D: After site of infection is isolated

Every hour that treatment is delayed survival is decreased by:

A 1.6%

B 10.6%

C 4.6%

D 7.6%

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-586 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF MEDICATION UTILIZATION AND INTEGRATION OF PHARMACY SERVICES IN THE CARDIAC CATHETERIZATION LAB AT AN ACADEMIC MEDICAL CENTER

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Purpose: Cardiac catheterization labs (cath labs) are an integral part of any hospital that provides cardiac services. High-alert medications that require intensive monitoring are commonly used in this setting, yet many cath labs do not have dedicated pharmacy services. Furthermore, little detail is known regarding medication utilization during cardiac catheterization procedures. In an effort to optimize medication utilization in the cath lab, a descriptive study will be performed to determine the role pharmacy services could provide. Methods: Froedtert Hospital is a 500 bed academic medical center, performing over 1300 cardiac catheterizations annually. To better understand the medication utilization process in Froedtert Hospital's cath lab, tours of the facility and surveys of cath lab staff will be conducted. A retrospective analysis of medication errors from May 1st, 2012 through July 31st, 2012 will then be performed. Inpatients that underwent a catheterization procedure and received at least one high-alert medication will be identified. The appropriateness of drug choice and dosing will be evaluated and patient outcomes will be assessed. Any medication that would have been adjusted if a pharmacist was involved in the process will be considered a medication error. Adjustment will include but not be limited to dose, rate or timing modification, selection of alternative agent or discontinuation of therapy altogether. Based on this information, opportunities to improve medication utilization in the cath lab will be assessed and reviewed. Along with the results of the survey, the potential benefits of pharmacy services in the cath lab will be weighed against time and financial constraints to help determine which services will be provided.

Results: Data collection and analysis are currently underway; results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review clinical guidelines for procedures and medication use in the cardiac cath lab

Discuss the potential role of pharmacy services in the cardiac cath lab

Self Assessment Questions:

Clinical guidelines recommend that hospitals providing primary PCI to patients with STEMI should treat patients within:

A 30 minutes

B: 60 minutes

C: 90 minutes

D: 120 minutes

Potential roles for the pharmacy department in the cath lab include:

A Preparation of non-STAT and/or STAT medications

B Performing medication histories and reconciliation prior to procedu

C Post-procedure assessment for core measures medications

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-767 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

UTILIZING PHARMACISTS TO FACILITATE THE MEDICATION RECONCILIATION PROCESS THROUGH IDENTIFICATION OF MEDICATION DISCREPANCIES IN A HEART FAILURE CLINIC

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Purpose: The Centers for Medicare & Medicaid Services Stage 2 core objective for meaningful use requires documentation of both inpatient and outpatient medication reconciliation. In our heart failure clinic, pharmacists encounter discrepancies by comparing the discharge medication list to the medication history obtained at the clinic visit. Pharmacists aid the physician with compliance of the outpatient medication reconciliation by: obtaining an accurate medication list, identifying discrepancies, and providing the patient with an updated medication list. The studys purpose is to identify the utility of having pharmacists assist with the medication reconciliation process by analyzing discrepancies identified during the medication history.□□Methods: This prospective cohort study was approved by the institutional review board. Heart failure patients who presented to the heart failure clinic for their first follow-up visit post-discharge from our hospital had a thorough medication history obtained by the pharmacist and were included in the study. The primary outcome was to distinguish the number, type, and severity of each medication discrepancy that exist between patients discharge orders and home medication lists at their first follow-up appointment after hospital discharge.□□Results: Based o preliminary results there were 79 total medication discrepanices discovered in 18 patients with a median of 3.5 medication discrepancies per patient. The majority of medication discrepancies were classified as an omission (37%), a severity Category C (66%) via the NCC-MERP Medication Error Category Index, and as cardiovascular medications (45%).□ □Conclusions: In heart failure patients who present for their firs follow-up appointment after hospital discharge, preliminary results revea a median of 3.5 medication discrepancies per patient with the majority classified as an omission and a NCC-MERP Medication Error Category Index of C.

Learning Objectives:

Recall the Medicare & Medicaid Services Meaningful Use Stage 2 medication reconciliation core objective

Identify and classify the common medication discrepancies discovered at a heart failure patients first follow-up appointment after hospital discharge

Self Assessment Questions:

The Medicare & Medicaid Services Meaningful Use Stage 2 core objective requires documentation of medication reconciliation in the setting of:

A Inpatient, but not outpatient

B: Outpatient, but not inpatient

C: Both inpatient and outpatient

D: Neither inpatient nor outpatient

In the Mercy Family Health Center Heart Failure clinic the pharmacist takes on the role of:

A Obtaining a thorough medication history

B Discussing the care plan with the attending cardiologist

C Updating the medication list which is provided to the patient

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-587 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

KETAMINE PATIENT -CONTROLLED ANALGESIA FOR ACUTE PAIN IN NATIVE AIRWAY MULTIPLE AND ORTHOPEDIC TRAUMA PATIENTS: A RANDOMIZED, ACTIVE COMPARATOR-CONTROLLED BLINDED TRIAL

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Purpose: The standard of care for analgesia in post-operative and multiple trauma patients is the use of opioids administered via intravenous (IV) or orally routes, and may also be given as patient-controlled analgesia. Though opioid agents can provide effective analgesia, they exhibit untoward effects that may be dose limiting. Ketamine is an anesthetic agent that modulates central sensation and hyperalgesia, and it acts directly on opioid receptors to provide analgesia. Ketamine may be an effective analgesic agent for use in patient-controlled analgesia (PCA) devices.□□Methods: This is an investigator-initiated, single-center, randomized, patient- and caregiver-blinded, controlled pilot trial. Multiple system and orthopedic native airway trauma patients admitted to the surgical intensive care unit at UC Health-University of Cincinnati Medical Center will be evaluated for inclusion. Patients will be included if they are greater than 18 years of age, have a total injury severity score of greater than 9, at least one major orthopedic injury, and are able to effectively use a PCA.□Patients will undergo blinded randomization to patient- and caregiver-blinded ketamine PCA 1.5-6 mg IV or hydromorphone PCA 0.1-0.4 mg IV; PCAs will have a lockout of 6 minutes, no 4-hour limit will be set, and basal infusions will be reserved for patients with persistent severe pain at highest intermittent dose and PCA mode. Both groups will be able to receive as needed opioid analgesia, hydromorphone 0.5-1 mg IV push every 2 hours as needed for breakthrough pain.□The primary aim of this study is to compare total and breakthrough opioid requirements, change in frequency of PCA therapy intensity, and objective pain scores between the two groups during ICU stay. The study will also evaluate differences in adverse effects of ketamine and hydromorphone, and patient-related outcomes between the two groups.□□Results: Preliminary results are pending patient enrollment and data analysis.

Learning Objectives:

Describe the mechanism of action of ketamine, and how it produces analgesia

Recognize adverse effects associated with ketamine, and how to address these effects

Self Assessment Questions:

How does ketamine exhibit analgesia effects systemically?

A Agonist activity on the opioid receptors and NMDA antagonism

B: Anti-inflammatory effects peripherally

C: Inhibition of cyclooxygenase-1 and 2 enzymes to decrease prostag

D: Activity on opioid receptors alone

How can hallucinations associated with ketamine administration be treated?

A Administration of intravenous haloperidol

B Use of quetiapine

C Non-pharmacologic therapies

D Administration of benzodiazepines

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-588 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

CHARACTERIZATION OF COMBINATION ANTIARRHYTHMIC DRUG THERAPY FOR PATIENTS WITH RECURRENT VENTRICULAR TACHYCARDIA

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Implantable cardioverter-defibrillators (ICDs) have become the mainstay of therapy in patients with sustained ventricular tachycardia (VT) or ventricular fibrillation (VF) at risk of sudden cardiac death. Although ICD therapies offer direct prevention of sudden cardiac death, the shocks required to terminate life-threatening ventricular arrhythmias have been shown to significantly impair quality of life. Due to these limitations, antiarrhythmic drugs (AADs) are often initiated concomitantly in patients with an ICD. Amiodarone is one of the most commonly used therapies for adjuvant AAD therapy in patients with an ICD. Despite its demonstrated clinical efficacy, many patients experience defibrillator shocks due to recurrent VT while receiving amiodarone. Although data are limited, use of combination AAD therapy has been shown to enhance the efficacy of arrhythmia prevention and decrease the burden of ICD shocks. Case reports and small studies have further demonstrated that mexiletine may offer additive benefits to amiodarone in patients with recurrent VT. The objective of this study is to describe the clinical course of patients with ICDs and recurrent VT and/or VF receiving combination antiarrhythmic drug therapy with amiodarone and mexiletine.□□This retrospective evaluation will describe patients admitted to the Ohio State University Wexner Medical Center who had an ICD and received adjuvant combination therapy with amiodarone and mexiletine during the designated study period of January 1, 2006 and December 31, 2011. Baseline data such as type of arrhythmia, indication for ICD and concomitant cardiology conditions will be collected to help characterize this patient population. Further data collection will include the time to event, occurrence of ICD discharge, discontinuation of either AAD and reason for discontinuation, requirement of additional AAD, cardiac procedures hospitalization for ventricular arrhythmia, and death. All data will be analyzed using descriptive statistics. Project has been approved by IRB and data collection is ongoing.

Learning Objectives:

Describe management strategies for preventing sudden cardiac death.

Identify the role of adjunctive antiarrhythmic drug therapy for patients with recurrent ventricular tachycardia.

Self Assessment Questions:

A benefit of using an implantable cardioverter defibrillators (ICD) is:

A Decreased prevalence of ventricular tachycardia

B: Anxiety

C: Decreased mortality in patients with sudden cardiac arrest

D: Decreased need for AAD therapy

A potential benefit of adding AADs as adjunctive therapy in patients with an ICD is:

A Decrease rate of ventricular tachycardia below the detection thresh

B Suppression of atrial arrhythmias

C Increase defibrillation threshold

D Arrythmogenic potential

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-589 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PROSPECTIVE EVALUATION OF A VENOUS THROMBOEMBOLISM RISK ASSESSMENT TOOL IN A COMMUNITY HOSPITAL

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Background: The American Society of Health Systems Pharmacist (ASHP) therapeutic position statement indicates that 60.5 percent of hospital medical patients do not receive appropriate venous thromboembolism (VTE) prophylaxis. Prophylaxis also occurs less in medical patients when compared to surgical patients. To avoid the detrimental outcomes of a VTE, organizations including the American College of Chest Physicians (ACCP) and ASHP recommend that medical patients be assessed for VTE risk. Several risk stratification tools exist to assist prescribers in choosing VTE prophylaxis. However, the 2012 CHEST Guidelines provide support for the use of the Padua model for risk assessment. Therefore and in response to physician request, a VTE prophylaxis risk assessment tool based on the Padua Prediction Score with clinical decision support was constructed for computerized prescriber order entry (CPOE) and will be trialed by pharmacy prior to its implementation. □□Methods: A daily report consisting of hospitalized patients without pharmacological and/or mechanical VTE prophylaxis will be generated. Chart reviews for patients located on medical units will be performed and risk scores will be calculated utilizing a paper version of the electronic form. Pharmacological prophylaxis will be recommended to the prescriber for patients with a calculated score greater than or equal to four, which is consistent with the Padua Prediction Score. Patient demographics will be reported. Outcomes regarding initiation of VTE prophylaxis will be documented and compiled. Furthermore, the daily report will be assessed for validity and usefulness as a tool for pharmacists to target those patients that may have not been assessed for VTE risk. Additiona data will be collected to determine nursing documentation tendencies of mechanical VTE prophylaxis. □□Results: Data and analysis is ongoing.□□Conclusion: Final results and conclusions will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the current guidelines for VTE prophylaxis for hospitalized medical patients as recommended by the ACCP.

Review the Padua Prediction score for VTE risk assessment.

Self Assessment Questions:

Which of the following statements is true regarding current ACCP VTE prophylaxis recommendations?

A All patients should receive pharmacological VTE prophylaxis.

B: All patients should receive mechanical and pharmacological VTE p

C: Pharmacological thromboprophylaxis is recommended for patients

D: Mechanical thromboprophylaxis is recommended for patients at in

Which of the following is risk factor for VTE in a hospitalized medical patient?

A Younger age

B Immobilization for less than 2 hours

C Active Cancer

D Discontinuation of hormonal therapy

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-768 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

APPROPRIATENESS OF PICC PLACEMENT IN PEDIATRIC PATIENTS

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PURPOSE: Pediatric infections such as pneumonia, skin and soft tissue infection, urinary tract infection or pyelonephritis, and septic arthritis can generally be treated with enteral antimicrobials after a short duration of intravenous (IV) antimicrobial therapy. Certain antimicrobials are so highly bioavailable that there may be limited advantage to parenteral therapy. Utilizing enterally administered antimicrobials avoids the added risk and cost of peripherally inserted central catheter (PICC) utilization. The objective of this study is to assess if pediatric patients who underwent PICC placement for IV antimicrobial therapy could have been appropriately treated with enteral therapy. METHODS: A retrospective medical record review was used to determine the PICC placement indication, reviewing only those PICCs placed for intravenous antimicrobial administration. Patients included in this review were pediatric patients who received a PICC placement for intravenous antimicrobials in 2011. Patient charts were reviewed for indication of antimicrobial therapy and contraindications for enteral therapy. Placement of a PICC for IV antimicrobials was considered necessary if enteral administration was not possible due to unreliable absorption or if an alternate highly bioavailable antimicrobial was not available in an enteral dosage form to adequately treat the infection. Placement of a PICC was considered avoidable if the antimicrobial agent used has a highly bioavailable enteral counterpart, and no absorption issues exist. PICC placement was also considered avoidable if the infection could have been treated with enteral therapy based on available data and experience. Additionally, PICC-related complications such as readmission, occlusion or thrombus development, leakage, malfunction, and PICC-related blood stream infection were documented and analyzed. RESULTS/CONCLUSION Data collection is ongoing. Results and conclusion will be presented at Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review enteral antimicrobials that may be used in place of intravenous antimicrobials in certain pediatric infections

Recognize potential complications of peripherally inserted central catheter (PICC) placement and use.

Self Assessment Questions:

Which of the following antimicrobials has approximately 100% enteral bioavailability?

A Ciprofloxacin
B: Amoxicillin
C: Sulfamethoxazole/Trimethoprim
D: Linezolid

Which of the following is a potential complication of PICC placement and use?

A Paralysis
B Thrombus/Occlusion
C Increased risk of bleeding
D Electrolyte imbalance

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-770 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A FORMALIZED CLINICAL ACUITY TOOL WITH QUALITY TRACKING IMPLICATIONS

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Purpose: The development of clinical acuity scoring tools/dashboards to assist pharmacists in their daily workflow has been identified as a priority based on recommendations from the Pharmacy Practice Model Summit. These tools assign a total complexity score to patients based on criteria such as diagnosis, lab values, prescription orders and pharmacist-to-dose orders. Patients with a higher score are considered more complex and are assigned a higher workflow priority. This tool helps pharmacists prospectively prioritize patients that require drug therapy management. This teams goal is the development of a standardized clinical acuity scoring tool for use across the health-system. Methods: The project team is utilizing a previous version of the scoring tool that has been in use at one of the sites as a starting template. A survey was developed and sent out to pharmacists to collect baseline data with regards to current daily decentral clinical practice and patient care issues. A pilot group will also evaluate the current tool and recommend optimizations, additions and deletions for the system-wide tool. The project team will utilize the collective information and finalize changes and customizations. They are also developing pharmacist education for the end of February, with input from pharmacy shared governance, prior to the targeted go-live of mid-March 2013. Staff will be re-surveyed 2 weeks and 6 weeks after implementation to assess the impact the tool has had on workflows and the ability to complete profile review. Further optimization will be considered based on survey results and feedback.

Results/Conclusions: Preliminary results including the average time since the last profile review was completed, number of profile reviews completed per shift, and pharmacist assessment of tool utility are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recognize the benefits and challenges to implementing and utilizing a clinical acuity scoring tool.

Describe why the specific scoring reports in the tool were selected.

Self Assessment Questions:

Which of the following scoring report columns factor into the overall score for a patient, if there is an active order?

A Tpn
B: IV to PO
C: Open i-Vent
D: A and C

Which of the following statements is true?

A The clinical acuity scoring tool is meant to be utilized by physicians
B The clinical acuity scoring tool provides a check-off function to aid
C The medications that flag in the “Meds needing labs” report are da
D Choosing the “Reset score” function allows you to selectively reset

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-769 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY AND SAFETY OF ANALGOSEDATION WITH FENTANYL VERSUS TRADITIONAL SEDATION WITH PROPOFOL

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Purpose: A sedative-hypnotic approach with benzodiazepines and propofol has historically been used for mechanically ventilated patients in the ICU in order to control agitation and facilitate ventilation. This practice is associated with a number of potential disadvantages including delirium, unstable hemodynamics, and undertreated pain. Analgosedation focuses on the initial treatment of pain and discomfort, which often leads to agitation in critically ill patients. The goal of this study is to compare the efficacy and safety of analgosedation with fentanyl versus traditional sedation with propofol in critically ill patients receiving mechanical ventilation. Methods: This retrospective, observational study will evaluate adult critically ill patients on mechanica ventilation who received continuous infusion fentanyl or propofol from July 2011 to present. The following baseline characteristics will be collected: age, gender, weight, maximum serum creatinine, ICU subtype APACHE II, and Charleston Weighted Index of Comorbidities. Duration of mechanical ventilation and ICU length of stay will be assessed for patients in each group. Pain (CPOT), sedation (RASS), and delirium (CAM-ICU) assessment results will be collected for the duration of mechanical ventilation. The mean dose of continuous infusion, rescue opioids, and rescue benzodiazepines will be collected to determine the efficacy of each regimen. Episodes of hypotension and bradycardia at any time during mechanical ventilation will be collected to assess the safety of each regimen. Results: Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Discuss traditional practices and limitations of analgesia and sedation in mechanically ventilated patients.

Review previously published literature regarding analgosedation in mechanical ventilation.

Self Assessment Questions:

Propofol is associated with which adverse effect?

A Delirium
B: Peripheral Edema
C: Hypotension
D: QT-prolongation

Which is the goal score for the CPOT pain scale?

A < 3
B < 4
C < 5
D < 6

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-590 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF PHARMACY STUDENTS UNDERSTANDING OF BIOSTATISTICS CONCEPTS

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Purpose The purpose of this study was to evaluate the effect of a newly required pre-pharmacy basic statistics course on the baseline biostatistical knowledge of entering pharmacy students. Methods A modified version of the previously validated Biostatistical Knowledge Test Survey Instrument (BKTSI) developed by Windish et al. was used in this study. The instrument was based on the most prevalent statistical methods used in contemporary research and was distributed to all pharmacy students within the Class of 2015 (no prior pre-pharmacy statistics course) and Class of 2016 (had pre-pharmacy statistics course) during the fall semesters of their first professional year. Data was collected using Qualtrics Research Suite software. Between class analyses were performed on individual question scores using chi-square tests and on mean total test scores using an independent t-test. Descriptive statistics were used as appropriate. The project was approved by the Indiana University Health Investigational Review Board. Results A total of 122 students participated in the survey with response rates of 47.3% (N=71) and 33.6% (N=51) for the Classes of 2015 and 2016, respectively. The most common incorrectly answered questions were similar between classes and included the following concepts for the Classes of 2015 and 2016, respectively: Cox proportional hazard regression (8.5% vs 9.8%), Kaplan-Meier analysis (15.5% vs 7.8%), and multivariate logistic regression (12.7% vs 9.8%). Analyses performed on individual question scores showed no statistically significant differences between classes. The between class analysis performed on the mean total test scores (36.3% vs 34.4%) was also not statistically significant [1.9% (95% CI, -2.3%-6.2%); p=0.367]. Conclusion The newly required pre-pharmacy basic statistics course did not appear to affect the baseline BKTSI scores for entering pharmacy students. Key areas for future instruction within the pharmacy curriculum include Cox proportional hazard regression, multivariate logistic regression, and Kaplan-Meier analysis.

Learning Objectives:

Recognize the need for biostatistics instruction within Doctor of Pharmacy programs.

Identify key focus areas for future biostatistics training.

Self Assessment Questions:

Approximately what percentage of questions did entering pharmacy students score correctly on the Biostatistics Knowledge Test Survey Instrument?

A 15%
B: 35%
C: 55%
D: 75%

The three concepts that pharmacy students scored the poorest on included:

A Ordinal variables, double-blind studies, t-tests
B P-values, relative risk, standard deviation
C Cox proportional hazard regression, multivariate logistic regressior
D ANOVA, confidence intervals, odds ratios

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-771 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

CONCURRENT USE OF ORAL PALIPERIDONE OR RISPERIDONE AMONG PATIENTS PRESCRIBED PAILPERIDONE PALMITATE LONG-ACTING INJECTABLE

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Purpose: The American Psychiatric Association (APA) Guidelines do no recommend concurrent use of oral atypical antipsychotics with long-acting injectable (LAI) atypical antipsychotics; however, concurrent use has been documented to varying degrees in recent literature. The purpose of the present study is to determine the incidence of concurrent paliperidone palmitate LAI and paliperidone or risperidone oral use in a community hospital setting and investigate patient predictors of concurrent prescribing, incidence of adverse effects, and cost. Results will be presented to clinicians at Community Health Network and incorporated into facility protocols if deemed clinically appropriate.□□Methods: This retrospective chart review received approval by the Institutional Review Board prior to commencement. Subjects between 18 and 75 years of age who received at least one order for paliperidone palmitate LAI between September 1, 2011 and August 31, 2012 will be identified through the hospitals electronic medical record. The medication administration record will be used to verify administration to the patient. Exclusion criteria include mental retardation, Parkinsons disease, pregnancy, and incarceration. Patient variables collected will include baseline characteristics/demographics, LAI maintenance dose, setting of initial LAI administration, type of concurrent use, time to first oral supplementation, adverse effects, duration of hospital stay, and number of re-hospitalizations. Type of concurrent use will be categorized as predominant (oral supplementatior on >80% of patient admission days), substantial (>15% of patient admission days), and none (<15% and assumed to be as needed). Documented adverse effects will encompass those significant enough tc result in antipsychotic discontinuation or the addition of a new pharmacological agent specifically to address that adverse effect. Arbitrary research identification numbers will be assigned to each subject, and all data will be securely maintained. When feasible, prescriber rationale for concomitant use will be assessed via semi-structured questionnaire.□□Results: To be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Recognize the recommendations proposed by the APA Guidelines for the treatment of schizophrenia

Identify which LAI antipsychotics require a bridge period with oral antipsychotic agents

Self Assessment Questions:

Which of the following statements adheres with the APA Guidelines recommendations for the treatment of schizophrenia?

A It is inappropriate to supplement a LAI with an oral antipsychotic d
B: Patients with recurrent relapses related to nonadherence are cand
C: Patients with recurrent relapses who simply prefer this route of adr
D: Scheduled oral antipsychotics are recommended to supplement L/

According to the products package insert, which LAI requires an oral bridging period at initiation of therapy?

A Paliperidone palmitate
B Fluphenazine decanoate
C Risperidone
D Haloperidol decanoate

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-591 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF GROUP EDUCATION CLASSES UTILIZING A CONVERSATION MAP IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Purpose: Type 2 diabetes mellitus is a complex disease that involves focus on both pharmacologic and non-pharmacologic care for proper management. Group education classes can potentially increase patient knowledge of medication use and lifestyle modification. The purpose of this study is to test the hypothesis that group diabetes education classes utilizing the U.S. Diabetes Conversation Map Program can increase patient knowledge of type 2 diabetes and impact the disease course.
□□

Methods: Patients with a diagnosis of type 2 diabetes mellitus or pre-diabetes have the opportunity to voluntarily enroll in group diabetes education classes as the standard of care. These classes include the Basic and Living Well series of the U.S. Diabetes Conversation Map program; this study specifically evaluates the Living Well series, which consists of pharmacist- and nurse-led sessions. The program includes pretests and posttests incorporated into the class as a tool to compare baseline knowledge to knowledge gained as a result of pharmacist- and nurse-facilitated discussions using a conversation map. A pretest-posttest design using the difference in test scores is used to determine the change in knowledge as a result of the class. A satisfaction survey given at the end of the class is used to evaluate the participants overall experience. Hemoglobin A1c, weight, and blood pressure at baseline and follow up obtained via chart review will be used to assess clinical effects of the group education class. Additionally, a survey to evaluate impact post-class will be mailed to participants one month after attendance. Statistical analysis will be conducted with paired t-tests for parametric and Wilcoxon matched-pairs signed-ranks test for non-parametric data.

Learning Objectives:

Explain the structure of group diabetes education classes at Kaiser Permanente Ohio.

Discuss the role of the pharmacist in group diabetes education classes.

Self Assessment Questions:

Which of the following health care professionals facilitates a session during the Living Well series?

A Primary Care Physician
B: Nurse
C: Dietician
D: Ophthalmologist

Which of the following topics does the pharmacist discuss in detail during the pharmacist-led session of the Living Well series?

A Natural progression and long-term complications of diabetes
B Relationship between diabetes and food
C Managing high and low blood glucose
D Meal planning and strategies for healthy eating

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-592 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF AN EMPLOYER-SPONSORED MEDICATION THERAPY MANAGEMENT PROGRAM

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To improve quality of life for employees and decrease health care costs, many employers are sponsoring programs to promote diabetes education and therapy management. The purpose of this study is to describe the implementation of a medication therapy management (MTM) service as part of an employer-sponsored diabetes management program for health plan beneficiaries and evaluate the impact of the MTM service on participants hemoglobin A1c, hospital and emergency department admission rates, and health care costs. This study has been approved by the Deaconess Research Institute. The self-insured health system implemented a diabetes management program for employees in Fall 2012. Health plan beneficiaries with uncontrolled diabetes were identified during required annual wellness screenings for the health plan. Based on individual needs and risk factors, beneficiaries with uncontrolled diabetes were referred to a medication therapy management clinic for a maximum of 6 visits with a pharmacist or to a Diabetes Center for diabetes education from a certified diabetic educator. Beneficiaries who complete the program will receive free diabetes supplies for a year and an incentive on insurance premiums for the following year. The health systems electronic medical record system will be used to compare participants hemoglobin A1c at baseline to program completion. A secure server managed by the Healthcare Advisory Board, a contracted third-party global research, technology, and consulting firm used by the health system, will be used to compare changes from baseline in emergency department visits, hospital admissions, thirty day hospital readmissions, drug per-member per-month (PMPM) costs, medical PMPM costs, and total PMPM costs. Complete results expected after program completion in June 2013.

Learning Objectives:

List the steps that need to be completed prior to implementation of an employer sponsored medication therapy management program.

Describe common obstacles encountered in the implementation of an employer sponsored medication therapy management program.

Self Assessment Questions:

Which of the following is a common obstacle encountered in the implementation of an employer sponsored medication therapy management program?

A Obtaining physician buy-in

B: Obtaining pharmacist buy-in

C: Pharmacist knowledge of medications and disease states

D: Finding patients who would benefit from MTM services

Which of the following is true regarding steps that should be completed prior to implementing an employer sponsored medication therapy managemenet program?

A Medicare reimbursement rates need to be determined

B Methods for tracking outcomes and quality assurance should be in

C MTM services should be expanded to cover several disease states

D Physicians should not be educated on MTM services before the pr

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-593 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF PHARMACY STUDENT-LED VERSUS NURSE-LEI MEDICATION RECONCILIATION INITIATION AT A LARGE REGIONAL MEDICAL CENTER

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Purpose: The Joint Commission National Patient Safety Goal 3 is to accurately and completely reconcile medications across the continuum of care. According to previous studies, accurate and complete medication histories are difficult to obtain due to poor health literacy, language barriers, poly-pharmacy, and circumstances of acute illness upon patient admission. Medication reconciliation studies at other locations have shown error rates of 20-47% on admission. A study conducted at this facility in 2011 found an average of 2.2 discrepancies per patient for nurse-initiated reconciliation. The same study found that when pharmacy personnel received uniform training, pharmacy students performed the most accurate reconciliations. At this facility, the Admission and Discharge Team (ADT), comprised of nurses, often conduct the initial medication reconciliation. Currently, no standardized training procedure is used for medication reconciliation. The purpose of this study is to compare the completeness and accuracy of medication reconciliation performed by pharmacy students and ADT nurses who receive standardized training.□□Methods: This study was conducted with approval of the local Institutional Review Board. During two separate seven-day pilots, pharmacy students and ADT nurses performed medication reconciliation for patients admitted to the hospital from the emergency department. Both groups received standardized education regarding proper medication reconciliation technique and used the same data collection and recording methods. The researching pharmacist performed an audit of each reconciliation within 24 hours to assess accuracy and completeness. Patients included in the analysis were 18 years or older, responsive or accompanied by a caregiver, and had a length of stay greater than 24 hours. Endpoints compared between groups include completeness and accuracy of reconciliations, number of interventions completed, and time spent performing reconciliation.□□Results and Conclusion: Preliminary data shows 15% error rates for each group. Results and further conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify common errors that occur during medication reconciliation.

Recognize the benefits of standardized training and education for medication reconciliation.

Self Assessment Questions:

Which of the following is a common error that occurs during medication reconciliation?

A The interviewer documents the incorrect formulation (IR vs. XL)

B: The patient neglects to report over-the-counter medications (prn m

C: The interviewer documents the incorrect dose (patient takes ½ tab

D: All of the above

Which of the following should be included in training for medication reconciliation?

A Methods for drug interaction checking

B Components of a comprehensive medication list

C Possible adverse effects of inhaled medications

D Maximum doses of common over-the-counter medications

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-852 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF A DOFETILIDE INITIATION PROTOCOL AT A COMMUNITY HOSPITAL

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Dofetilide is an FDA-approved anti-arrhythmic drug used to control atrial fibrillation and flutter. Initiation relies on accurately evaluating renal function and the presence of drug-drug interactions, as supratherapeutic doses can result in serious adverse events such as torsades de pointes. The primary objective of this study was to evaluate the safety of the current dofetilide initiation protocol at our institution and determine if changes were warranted based on various predictors of renal function.□□A retrospective chart review was conducted on patients initiated on dofetilide at our institution between August 1, 2011 and August 1, 2012. Data was collected regarding demographics, incidence of key adverse events, drug-drug interactions, dose reductions, and therapy cessation. If the current protocol was shown to be unsafe for any population, changes would be made to reflect these findings. Patients who are initiated on dofetilide using the updated protocol will be assessed as in the first phase of the review in order to validate changes.□□A total of 98 patients were reviewed. Of those, 35 patients (36%) required at least one dose reduction when using manufacturer recommendations for estimating renal function. Thirty-one (32%) and 28 patients (29%) would have required a dosage decrease when using adjusted ideal body weight (aIBW) and ideal body weight (IBW) respectively to estimate renal function. Additionally, 3 patients were observed to have developed torsades de pointes after initiation of dofetilide.□ □The results indicate that using IBW and actual creatinine in the Cockcroft-Gault equation could result in fewer patients requiring dose reductions. Body weight, rather than serum creatinine, appears to correlate with a need for dose reduction or cessation of therapy due to QTc prolongation or torsades de pointes.

Learning Objectives:

Describe the relationship between body weight and actual serum creatinine in the initiation of dofetilide dosing

Identify the incidence of torsades de pointes after initiation on dofetilide following our institution's policy

Self Assessment Questions:

Which combination of body weight measurement and serum creatinine in this study best predicts an accurate initial dose of dofetilide?

A Actual serum creatinine and adjusted ideal body weight
B: Actual serum creatinine and ideal body weight
C: Actual serum creatinine and actual body weight
D: Serum creatinine rounded to 1 and actual body weight

What was the incidence of torsades de pointes observed in this study?

A 10%
B 5%
C 1%
D 3%

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-853 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES IN KIDNEY TRANSPLANT RECIPIENTS TREATED FOR EMPIRIC VERSUS BIOPSY PROVEN-ACUTE CELLULAR REJECTIO

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Objectives: Renal biopsy unequivocally demonstrates rejection subtypes and remains the gold standard for diagnosis of graft dysfunction and facilitates patient management. Despite its utility, there is a reluctance to perform biopsies in renal allografts for fear of complications that may jeopardize the graft. The aim of this study was to evaluate renal allograft function after treatment of acute cellular rejection (ACR), evaluating differences in outcomes between biopsy-driven versus empiric therapy. This study also assessed bleeding risk associated with biopsy and the incidence of opportunistic infections in these groups. □ □Design and Methods: This retrospective study included kidney transplant recipients who had received IV methylprednisolone post-transplantation from January 1, 2005-September 28, 2012 at a single academic medical center. The comparator groups are patients who have versus have not received a biopsy. Allograft function was measured by creatinine clearance and MDRD at 1, 3, and 5 years after treatment for acute cellular rejection. The incidence of pneumocystis jirovecii pneumonia, BK virus, and cytomegalovirus post-treatment was also assessed. Lastly, bleeding complications due to biopsy were evaluated using changes in hemoglobin and hematocrit before and after biopsy as well as the need for any blood transfusions.□□Results: There were 561 kidney transplants performed during the study period with 58% of kidney transplant recipients being men. Forty-eight percent (48%) of renal failure was due to hypertension and diabetes. Data collection is ongoing

Learning Objectives:

Recognize the disadvantages of empiric treatment of acute cellular rejection

Identify the risks associated with kidney biopsy

Self Assessment Questions:

A proposed disadvantage of treating ACR without pathological evidence is

A Inappropriate treatment of kidney dysfunction
B: Decreased immunosuppression
C: Initiating treatment earlier
D: Increased risk of bleeding

Risks associated with kidney biopsy include

A Fever
B Hypertension
C electrolyte abnormalities
D Bleeding

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-772 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION OF STANDARD CONCENTRATION INTERMITTENT IV MEDICATION THERAPY IN A PEDIATRIC PATIENT POPULATION: IMPACT ON PATIENT SAFETY

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Purpose: Pediatric adverse drug events (ADEs) are 2.5 times more likely to occur compared to adult patients. Many of the medications that result in medication errors are intravenous medications, often administered via intermittent infusion. Improvement in dosing and method of administration of these medications may reduce the incidence of ADEs in pediatric patients. The pharmacy department at ProMedica Toledo Childrens Hospital (PTCH) is preparing to implement standardized concentrations for intermittent IV medications in a ready-to administer (RTA) format via Alaris Syringe Pump for all infants and smal children. Intermittent IV doses are currently sent in pre-drawn syringes, but then require dilution for buretrol or syringe pump administration at bedside. Often alerts are generated that are over-ridden by nurses and, in some cases; the dose-limit drug library (Guardrails) is by-passed. The purpose of this investigation is to determine if these changes made a positive improvement in patient care and improve patient safety.

Methods: Review of retrospective data from existing quarterly reports ar analytic service obtained during 2011 and 2012 will be used as baseline. Implementation of RTA intermittent IV medications at PTCH will occur in February 2013. Intravenous medication for all infants and children weighing 10 kg and less will be provided for intermittent administration via syringe pump pre-diluted to a standard concentration, eliminating the need for nurses to manipulate the medication before administering it to the patient. Quarterly CareFusion reports from the Alaris IV pump database will be examined. Data to be analyzed includes nursing compliance with the Guardrails drug library, number of alerts and overrides generated, and the top 5 intermittent IV medications per quarter generating alerts before and after the implementation of this program. Data will be evaluated to determine whether this program had an impact in decreasing potential medication errors and improving patient safety in the pediatric setting.

Learning Objectives:

Define the common medications that result in alerts generated by the Alaris IV pumps before and after implementation of the ready to administer program.

Describe the effect that using standardized concentrations for intermittent IV medications had on patient care and safety in a pediatric setting.

Self Assessment Questions:

1.What class of medications are a major cause of alerts generated by the Alaris IV pumps before the implementation of the ready to administe medication program?

A Analgesics

B: Antibiotics

C: Anticonvulsants

D: Sedatives

What type of IV infusion resulted in the highest number of override alerts?

A Continuous

B Bolus

C Intermittent

D Fluid

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-854 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF CONTINUOUS INFUSION HEPARIN TO PREVENT CENTRAL LINE THROMBOSIS AND CATHETER OCCLUSION IN THE NEONATE

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Purpose: The 2012 CHEST Guidelines recommend the use of continuous infusion heparin at 0.5 units/kg/hr as a therapeutic alternative to maintain patency of central lines in neonates. Prior to October 2012 the Neonatal Intensive Care Unit (NICU) at Rush University Medical Center did not routinely use heparin for the prevention of central line occlusion. Beginning in October 2012, the standard of care was changed to include heparin at a concentration of 0.5 units/mL in all fluids infusing through any central line. The rationale for this method of heparin administration is that adding heparin directly into the parenteral fluids does not require administration of additional fluids through a separate infusion. Total fluid volume administered in this population is often a clinical concern. The purpose of this study is to compare the rate of clotting of central lines between neonates who did not receive heparin in central line fluids and patients who did receive heparin in central line fluids. Methods: This study consists of a retrospective chart review o Rush University Medical Center NICU patients from January 2012 to February 2013. Inclusion criteria include NICU patients with any central line (including umbilical lines). Neonates with congenital heart disease are excluded from the study. The primary outcome is the rate of clotting of central lines. Secondary outcomes include total line days, reason for catheter removal, grade 3 or 4 intraventricular hemorrhage, central line associated blood stream infections, and reported heparin errors. Results/Conclusions: Data collection, evaluation, and analysi are currently in progress.

Learning Objectives:

Describe the CHEST Guideline recommendations for heparin administration for the purpose of maintaining patency of central lines in neonates.

Discuss the rationale for adding heparin directly into parenteral fluids that are to be infused through a central line.

Self Assessment Questions:

The 2012 CHEST Guidelines recommend which of the following doses of unfractionated heparin to maintain patency of central venous access devices:

A 5000 units subcutaneously every 12 hours

B: 1 units/kg/hour continuous infusion

C: 0.5 units/kg/hour continuous infusion

D: Unfractionated heparin should not be used for this indication

Which of the following is true regarding heparin administration for prevention of central line thrombosis in neonates at the Rush University Medical Center NICU?

A Heparin is not currently used for prevention of central line thrombo

B Heparin is added to all parenteral fluids, including peripheral and c

C Heparin is added to central line fluids at a concentration of 1unit/m

D Heparin is added directly into central line fluids to avoid administra

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-594 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HIGH DOSE VERSUS LOW DOSE DEXMEDETOMIDINE FOR SEDATION: AN ANALYSIS OF SAFETY AND EFFICACY IN THE CRITICAL CARE SETTING

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Purpose: Dosing for dexmedetomidine is variable when used for sedation of mechanically ventilated patients in the ICU. Although it is only FDA approved at doses up to 0.7 mcg/kg/hr, our institution often administers doses up to 3 mcg/kg/hr with limited data to support such a strategy. The objective of this study is to assess clinical outcomes and safety in mechanically ventilated patients undergoing sedation with high dose versus low dose dexmedetomidine in the critical care setting.

Methods: This is a retrospective cohort study analyzing data collected from electronic charts of patients admitted to the ICU between May 2012 and December 2012. Patients were included if they were mechanically ventilated, were receiving dexmedetomidine for sedation, and were > 18 years of age. Patients were excluded if they received dexmedetomidine for < 6 hours, if it was ordered for a primary indication of alcohol withdrawal, if it was ordered for any other indication other than sedation, or if there was incomplete study data. There are two arms of this study patients who received dexmedetomidine at a dose of < 1.5 mcg/kg/hr (low dose group) and patients who received dexmedetomidine at a dose of ≥ 1.5 mcg/kg/hr (high dose group). The primary outcome is the percent of RASS scores within target sedation range (RASS of -1 to 0 per Bronson standards unless otherwise specified by physician). Secondary outcomes include mean ICU LOS, incidence of concomitant IV sedatives or antipsychotics, incidence of delirium based on CAM-ICU scores, percent of patients who self-extubated, and incidence of hypotension and/or bradycardia. Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Explain the advantages and/or disadvantages of administering dexmedetomidine at or above 1.5 mcg/kg/hr

Discuss the possible side effects which may occur during sedation with dexmedetomidine

Self Assessment Questions:

What is the FDA approved maximum infusion rate for dexmedetomidine?

A 2.5 mcg/kg/hr
B: 0.7 mcg/kg/hr
C: 1.5 mcg/kg/hr
D: 1.4 mcg/kg/hr

The most common adverse effects of dexmedetomidine are _____ and _____.

A Hypertension and bradycardia
B Tachycardia and hypotension
C Bradycardia and hypotension
D Hypertension and tachycardia

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-595 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

HEALTHCARE FAILURE MODE AND EFFECT ANALYSIS (HFMEA) OF THE HOME HEALTH CARE PROCESS AT THE CINCINNATI VETERANS AFFAIRS MEDICAL CENTER (VAMC)

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Purpose The lack of standardization of the Home Health process at the Cincinnati Veterans Affairs Medical Center (CVAMC) has resulted in missed opportunities, inconsistent follow-up, and bed flow challenges. This resulted in the proposal of an internal review of home health referrals and follow-up processes to identify problems, and provide solutions. The objective of this study is to conduct a Healthcare Failure Mode and Effect Analysis (HFMEA) of the Home Health care referral process at the CVAMC to identify weaknesses in the process and propose solutions for improvement, focusing on opportunities for pharmacists to make an impact on the model. Methods A HFMEA will be conducted to outline the referral process of Home Health care in the CVAMC to recognize failure modes and identify actions to eliminate them. The HFMEA is a five step process used to proactively evaluate a system for vulnerabilities and improvements before adverse events or close calls can occur. A flow diagram of the current Home Health process will be developed to outline the process with Failure Modes identified at each step. These Failure Modes will be assigned a score using the Hazard Scoring Matrix to determine the impact failure at that step would have on the process. Information will be collected primarily from interviews conducted with the disciplines currently or potentially involved in the Home Health process, including the Home Health nursing staff, inpatient physicians, nurses, antimicrobial stewardship program, patient safety, Home Based Primary Care, Informatics, Utilization Management and pharmacy. When developing actions/outcomes to Failure Modes, special attention will be paid to the role pharmacists can play to impact the process of Home Health referrals and improve overall patient care as they transition from one level of care to another. Results Results will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify how use of the Healthcare Failure Mode and Effect Analysis (HFMEA) can improve the Home Health model at the Cincinnati Veterans Affairs Medical Center

Discuss the impact improvements of the Home Health model can have on the medical center and patient care

Self Assessment Questions:

What is the purpose of the Healthcare Failure Mode and Effect Analysis (HFMEA) model in evaluating the Home Health referral process?

A To review adverse events that have already occurred and develop
B: To proactively evaluate a system for vulnerabilities and improveme
C: To help determine who is at fault for an adverse event occurring
D: To help identify patients who are at high risk for developing an adv

Improvement in the Home Health Care model can have which of the following impacts on the medical center?

A Worsen bed flow
B Increase costs to the medical center
C Improve patient care
D Minimize the role of the pharmacist

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-773 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF A PATIENT ALIGNED CARE TEAM (PACT) MODEL PHARMACIST IN A RURAL COMMUNITY BASED OUTPATIENT CLINIC (CBOC)

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Purpose: In 2010, the Veterans Health Administration restructured care provided to patients by creating an interdisciplinary team of providers called the Patient Aligned Care Team (PACT). Clinical pharmacists play an important role in the PACT model by prescribing medications and monitoring therapy through direct patient care. Rural Veterans are identified as a current population of interest. The geographic isolation of rural areas creates challenges such as barriers to accessing health care. The objective of this study is to evaluate if clinical pharmacy services in a rural setting using the PACT model results in improved glycemic control and better patient outcomes. Methods: This retrospective review of patients seen by the PACT clinical pharmacist between August 1, 2011 and July 31, 2012 in the Diabetes Control Clinic (DCC) at the Marion Veterans Affairs (VA) community based outpatient clinic (CBOC) will be selected from a pharmacy-database generated list based on consult requests. Eligible patients will be 18 years of age or older with a diagnosis of type 2 diabetes and a hemoglobin A1c greater than or equal to 7%, or wish to switch to VA formulary diabetic medications from private sector non-formulary agents. Included patients will also have a new service consult for management by the DCC between August 2011 and April 2012, and attended an initial and at least one follow-up visit with the DCC. Patients will be excluded if they have type 1 diabetes, are pregnant, transfer to endocrinology for continuation of diabetes care, or do not have a follow-up hemoglobin A1c after initial management by the clinical pharmacist. Patients will also be excluded if they are a transfer patient from another DCC, unless greater than 6 months has passed since their last visit. Results/Conclusions: Results and conclusions are pending and will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify appropriate preventative health care in patients with type 2 diabetes

Select the correct use of oral diabetic agents based on insulin use

Self Assessment Questions:

Which procedure should a patient with type 2 diabetes have performed annually?

A Pulmonary function test

B: Electrocardiogram (EKG)

C: Dilated eye exam

D: Bone density scan

Which of the following oral medications should be discontinued in a patient that is using insulin aspart 15 units before each meal?

A Metformin 1000mg twice daily

B Glipizide 10mg twice daily

C Pioglitazone 30mg once daily

D Sitagliptin 100mg once daily

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-596 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE RISK FACTORS ASSOCIATED WITH SEVERE CLOSTRIDIUM DIFFICILE

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Background: Clostridium difficile (C. difficile) remains the leading cause of health care-associated infectious diarrhea, and its incidence is dramatically increasing. The Society for Healthcare Epidemiology of America and the Infectious Diseases Society of America (SHEA/IDSA) created guidelines to classify the severity of C. difficile based on laboratory parameters. According to these guidelines, risk factors for C. difficile include: advanced age (≥ 65 years), duration of hospitalization, previous exposure to antimicrobial agents, cancer chemotherapy, immunosuppression, manipulation of the GI tract, and acid suppressive medications. Risk factors for severe C. difficile are not currently as well known and studies evaluating these risk factors have been inconclusive. Purpose: The primary objective of this study is to evaluate risk factors, specifically advanced age, associated with severe C. difficile infection (CDI) at Edward Hines Jr. VA Hospital using the definition set forth by the SHEA/IDSA guidelines. Secondary objectives include: the number of relapsed CDI within 60 days, mortality at 30 days and 90 days, and treatment failures. These outcomes will be compared between severe and non-severe groups. Methods: This study is a retrospective cohort chart review of patients having had a CDI between May 2010 through September 2012. Patients will be included in this study if they had a CDI as documented by a positive stool toxin assay and acute diarrheal episode with no other causes and are ≥ 18 years of age. Patients will be excluded from the study if they had CDI within the last three months. Data collection will include: demographics, co-morbid conditions, location within the hospital at the time of diagnosis, previous or concurrent medications thought to increase risk for CDI, classification of CDI, complications from CDI, prior surgical or endoscopic procedures prior admission, long-term care or nursing home stay, and laboratory parameters. Results/Conclusions: Pending.

Learning Objectives:

Review the SHEA/IDSA guidelines and current literature for risk factors associated with severe CDI.

Identify potential risk factors that may predispose patients to severe CDI

Self Assessment Questions:

According to the SHEA/IDSA guidelines, what laboratory parameters would predict a patient to have a severe CDI?

A WBC < 10,000 cells/uL or Scr < 1.0 times the premorbid level

B: WBC > 10,000 cells/uL or Scr > 1.0 times the premorbid level

C: WBC < 15,000 cells/uL or Scr < 1.5 times the premorbid level

D: WBC > 15,000 cells/uL or Scr > 1.5 times the premorbid level

Which of the following risk factors is associated with severe CDI?

A Advanced age

B No previous exposure to antibiotics

C Immunocompetent patients

D Short length of stay (< 24 hours) in the hospital

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-597 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ESTABLISHING THE ROLE OF PHARMACISTS IN THE INITIATION AND TITRATION OF INSULIN THERAPY AT AN ACUTE CARE FACILITY

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BACKGROUND: Malglycemia is associated with poor clinical outcomes in hospitalized patients including increased length of stay, morbidity and mortality. Obstacles such as an insufficient knowledge of insulin and a lack of patient-specific insulin regimens have been identified as barriers to achieving optimal glycemic control in this patient population. As experts in the pharmacokinetic properties of insulin, pharmacists may have a significant role in optimizing insulin therapy in these patients. PURPOSE: The purpose of this study is to establish the role of pharmacists in the initiation and management of insulin therapy in hospitalized patients. METHODS: This study is comprised of a retrospective control group and a prospective intervention group. The control group includes patients admitted to pre-specified medical/surgical units within a 6 month period. The intervention group will include patients admitted to the same pre-specified units with a pharmacist reviewing their insulin regimens. Pharmacists will formulate recommendations with the guidance of a study-specific protocol and discuss them with physicians involved in the care of the patient. Inclusion criteria include patients 18 years of age or older, admitted to the pre-specified unit, with at least three blood glucose readings greater than 180 mg/dL within the previous 24 hours while receiving subcutaneous insulin. Exclusion criteria include Type 1 Diabetes Mellitus, hyperglycemic crisis or hypoglycemia on admission, inpatient oral anti-hyperglycemic use, concomitant corticosteroid use, pregnancy, recipient of enteral or parenteral nutrition, renal dysfunction, insulin pump therapy, or insulin management by an endocrinologist. The primary outcome is to evaluate any change in glycemic control as a result of pharmacist-driven interventions. The secondary outcome will assess the number and type of pharmacist interventions accepted. Data collected will include patient demographics, inpatient insulin regimens, and blood glucose values. RESULTS AND CONCLUSION: Results and conclusions to be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss potential consequences of hyperglycemia and hypoglycemia in hospitalized patients.

Identify the role of pharmacists in the management of malglycemia in hospitalized patients.

Self Assessment Questions:

Malglycemia has been shown to lead to all of the following outcomes EXCEPT:

A Increased length of stay

B: Decreased mortality

C: Increased morbidity

D: Increased utilization of hospital resources

Which of the following obstacles to optimal glycemic control have the potential to be overcome with pharmacist intervention?

A Insufficient knowledge of insulin

B Failure to tailor insulin regimen to the patient

C Failure to adjust insulin doses promptly

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-598 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF HIGH DOSE UNBOOSTED ATAZANAVIR IN COMBINATION WITH EMTRICITABINE/TENOFOVIR IN HIV INFECTED PATIENTS

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Purpose: Atazanavir and tenofovir are recommended as preferred agents in the treatment of HIV. Due to a drug-drug interaction between atazanavir and tenofovir that results in decreased concentrations of atazanavir, the combination of atazanavir and tenofovir without ritonavir boosting is not currently recommended. Unfortunately, many HIV infected patients are unable to tolerate the side effects from ritonavir, requiring an alternative dosing regimen. The purpose of this study was to determine if high dose, unboosted atazanavir is as effective as ritonavir boosted atazanavir when used in combination with emtricitabine/tenofovir for the treatment of HIV infected patients. Methods: Patients were identified retrospectively between January 1992 to June 2012 through a computer generated report from the University of Louisville Health Care HIV clinic. Patients were included if they were ≥18 years of age, failed or were not a candidate for ritonavir boosted atazanavir plus tenofovir/emtricitabine, and who were treatment experienced. Patients younger than 18 years of age, pregnant, treatment nave or diagnosed severe hepatic and/or renal impairment were excluded. The primary outcome was the number of patients with an HIV-RNA level ≤400 copies/mL while on the treatment regimen compared to the control regimen of boosted atazanavir and emtricitabine/tenofovir. Secondary outcomes included: change in CD4 counts, fasting lipid levels, serum creatinine, total bilirubin from baseline. The study also analyzed the proportion of patients with virologic failure warranting change in therapeutic regimen and the incidence of cardiac events due to QTc prolongation. Results: Seven of eight patients achieved HIV-RNA levels ≤ 400 copies/mL while on the treatment regimen compared to eight of eight patients on the control regimen (p=0.4). Average total bilirubin was similar between patients on the treatment regimen (1.59 mg/dL) and control regimen (1.73 mg/dL, p=0.51). Conclusion: Further results and conclusions to be presented at Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the recommended first line HIV treatment regimens according to current guidelines

Describe monitoring that should be completed routinely in patients receiving atazanavir

Self Assessment Questions:

Which of the following regimens is considered to be first line treatment for HIV?

A Maraviroc and abacavir/lamivudine

B: Atazanavir, ritonavir and emtricitabine/tenofovir

C: Raltegravir and lamivudine/zidovudine

D: Elvitegravir, efavirenz and lamivudine

What is a commonly described side effect of atazanavir?

A Rhabdomyolysis

B Proteinuria

C Hyperbilirubinemia

D Intracranial hemorrhage

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-639 -L02-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF COMPOUNDED BIO-IDENTICAL HORMONE REPLACEMENT THERAPY IN THE TREATMENT OF MENOPAUSAL SYMPTOMS

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Background: Compounded Bio identical hormone replacement therapy (CBHRT) has become more popular in recent years because it is believed to be natural and safer with less side effects than conventional hormone replacement therapy for relief of menopausal symptoms. CBHRT is defined as hormone preparations that have exactly the same chemical and molecular structure as the hormones produced within the human body. They are usually plant-derived and are specifically compounded for an individual patient based on their unique symptoms and needs. Currently, there are limited studies on the use of CBHRT for relief of menopausal symptoms Purpose: The purpose of this study is to evaluate the effectiveness of CBHRT in treating menopausal symptoms using saliva testing and symptoms questionnaires. Methods: This is a prospective, single center, non-randomized study conducted at an independent community pharmacy. The patients involved in the study complete a menopause symptoms questionnaire during their initial visit for hormonal evaluation. Patients are asked to rate these selected symptoms as absent, mild, moderate o severe. The same symptoms questionnaire is completed again by the patients within 3 to 6 months after initiation of CBHRT compounded at Medica pharmacy to evaluate resolution of the problem symptoms. The patients also an initial and follow up saliva testing to ensure the imbalanced hormone levels are treated to the normal accepted laboratory ranges. Results/Conclusions: Pending: results and conclusion from this study will be presented at the Great Lakes Conference

Learning Objectives:

Recognize common menopausal symptoms

Discuss the use of saliva testing in evaluating hormonal imbalance in women

Self Assessment Questions:

Which of the following hormones are used to measure the level of hormonal imbalance in menopausal women?

A Estrone, Estradiol and Progesterone
B: Insulin, Estriol and DHEA
C: Testosterone, Cortisol and Progesterone
D: Estradiol, Estrogen and Cortisol

CBHRT has become more popular in recent years because of which of the following reasons?

A Insurance claims for CBHRT are easy to process
B They are believed to be natural and safer with less side effects tha
C Different clinical trials supports use of CBHRT for treatment of me
D They are compounded with synthetic chemicals have less side eff

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-599 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE OF CLINICAL HYPOTENSION BETWEEN ETOMIDATE AND KETAMINE USED FOR INTUBATION IN A MEDICAL INTENSIVE CARE UNIT

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Etomidate is a sedative-hypnotic agent commonly used for intubation with minimal effects on hemodynamics and respiratory drive. However, etomidate inhibits conversion of cholesterol to cortisol and a single dose may cause adrenal suppression for 24-72 hours. Caution is warranted when using etomidate in septic patients due to infection related adrenal insufficiency, potentially affecting long term outcomes. Ketamine use has increased in our medical intensive care unit (MICU) due its low impact on the hemodynamic profile and no proven influence on the adrenal system. However, ketamine has direct negative inotropic effects and limited data is published on its use for intubation. The purpose of this retrospective single-center cohort is to compare the incidence of clinical hypotension between etomidate and ketamine. Patients 18 years or older were included if they received either etomidate or ketamine for intubation in the MICU between October 15, 2011 and December 31, 2012. Only the first intubation with either agent was included for analysis. Notable exclusion criteria were intubation during cardiopulmonary resuscitation or administration of either drug within the previous 72 hours. The primary outcome is the incidence of clinical hypotension one hour post intubation, defined as mean arterial pressure (MAP) decrease > 40% and MAP <70 mmHg, MAP <60 mmHg, systolic blood pressure <90 mmHg lasting >15 minutes, initiation of vasopressor or > 30% increase in vasopressor dose. Secondary outcomes include clinical hypotension1-5h, 6-11h and 12-24h post intubation when compared to one hour prior to intubation. MAPs and medications with the potential to affect blood pressure were also compared between groups at the specified time ranges. Additional patient outcomes included length of hospital and ICU stay, mechanical ventilation free days, and initiation of stress dose steroids within 72 hours after intubation. Patient outcomes remain under investigation, with data collection and evaluation currently being conducted.

Learning Objectives:

Explain the differences in pharmacologic properties between ketamine and etomidate.

Discuss the benefits and risks of etomidate and ketamine when used for intubation in patient specific scenarios.

Self Assessment Questions:

How does etomidate primarily cause adrenal suppression?

A Inhibition of aldosterone
B: Inhibition of 11-beta hydroxylase
C: Interaction with, cosynotropin, the test to assess adrenal insufficie
D: Inhibition of cholesterol side chain cleavage

The effect of ketamine on cardiac function is

A It is a negative inotrope
B It has beta blocking effects
C It causes a release of endogenous catecholamines
D both A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-774 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PRELIMINARY BAL CULTURE UTILITY AT THE UNIVERSITY OF CINCINNATI MEDICAL CENTER

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Background:□□Ventilator-associated pneumonia (VAP) is prevalent among mechanically ventilated, critically ill patients and is associated with high mortality. Adequate empiric antibiotic therapy is imperative to successfully treat VAP. Bacteriologic diagnostic strategies (e.g., quantitative bronchoalveolar lavage [BAL]) are preferred to qualify the overly sensitive clinical diagnostic parameters and limit unnecessary antibiotic therapy in patients without pneumonia. Despite this, quantitative culture results may take 72-96 hours to finalize, thus empiric antibiotic therapy is prolonged in patients without pneumonia. This study will evaluate the utility of preliminary quantitative BAL culture results in de-escalating, discontinuing, or continuing empiric antibiotic therapy for VAP.□□Methods:□□This is a single-center, multi-ICU, observational study evaluating BAL culture data in critically ill patients with suspected VAP. All patients in the surgical ICU and medical ICU who undergo quantitative bronchoscopic or non-bronchoscopic BAL will be prospectively identified and BAL cultures tracked through routine clinical practice. Patients will be included for a period of six months following approval by the institutional review board.□□Primary outcomes include sensitivity, specificity, negative and positive predictive values for preliminary culture results at 24-hour timepoints vs. final culture results. Final BAL culture with at least one pathogenic bacterial isolate growing ≥ 105 cfu/mL will be considered positive disease. Secondary outcomes include rate of inappropriate empiric therapy discontinuation had the preliminary culture results been followed and the association of preliminary cultures with clinical pulmonary infection scores, which assign value to temperature, white blood cell count, tracheal secretions, PaO2/FiO2, and chest radiograph, at the time of BAL, time of preliminary culture results, and time of final culture results.□□Results:□□Data collection and analysis are ongoing. To this point, 45 ICU patients with BAL cultures have been identified.

Learning Objectives:

Recognize the importance of knowing the predictive value of preliminary bronchoalveolar lavage (BAL) culture results at a specific institution

Explain the potential benefits of accurate preliminary BAL culture results after conducting research at a specific institution

Self Assessment Questions:

Knowing the predictive value of preliminary BAL culture results at a specific institution would allow practitioners to:

A Trust the Gram's stain most of the time

B: Know with that another organism will not grow on final culture resu

C: Have confidence that their choice of empiric antibiotic therapy is lik

D: Ignore final culture results

Which of the following is a potential benefit of reliable preliminary BAL culture results?

A Early de-escalation of empiric antibiotic therapy

B Delayed empiric antibiotic coverage

C Decreased costs of obtaining BAL cultures

D Shorter durations of antibiotic therapy for VAP

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-600 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF SILDENAFIL USE IN PULMONARY HYPERTENSION PATIENTS WITH LEFT VENTRICULAR ASSIST DEVICES PRIOR TO ORTHOTOPIC HEART TRANSPLANT

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Purpose□Sildenafil is an oral phosphodiesterase 5A inhibitor (PDE-5) that decreases peripheral vascular resistance (PVR) and increases cardiac index in patients with pulmonary hypertension secondary to chronic left sided heart failure. Sildenafil was recently studied in conjunction with left ventricular assist device (LVAD) therapy to lower PVR to optimal levels for heart transplantation. At Northwestern Memorial Hospital (NMH), sildenafil therapy is added and titrated to the maximal tolerated dose in patients with pulmonary hypertension and an LVAD. The purpose of this study is to evaluate the efficacy and tolerability of sildenafil therapy for pulmonary hypertension in patients with an LVAD for bridge to orthotopic heart transplant (OHT).
□□

Methods□This was a retrospective cohort study evaluating the efficacy and tolerability of sildenafil therapy in end- stage heart failure patients with pulmonary hypertension that have undergone LVAD implantation prior to OHT at NMH. Patients hospitalized from December 2007 through September 2012 and identified from the NMH LVAD registry were considered for inclusion. Variables collected included: age, race, type of LVAD device implanted, etiology of cardiomyopathy, concomitan pulmonary disease, serum creatinine, liver function tests, and baseline medications that would affect pulmonary pressures. Echocardiograms and right-heart catheterization reports were assessed for documentation of pulmonary hypertension resolution prior to LVAD implant, post LVAD implant, at the fourth biopsy post OHT, and one year post OHT. Sildenafil dose was also collected at these time points. The primary end point was the number of patients with an appropriate PVR for heart transplant. Secondary endpoints included sildenafil dose optimization, side effects, medication regimen changes, and the heart failure readmissions three months after the addition of sildenafil therapy and LVAD implementation. This study was approved by the institutional boards at Northwestern Memorial Hospital and Midwestern University.□□Results/Conclusions□Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Recognize the role of pulmonary hypertension complications in heart transplantation.

Describe hemodynamic effects of sildenafil and its role in pulmonary hypertension.

Self Assessment Questions:

Sildenafil decreases pulmonary vascular resistance in patients with pulmonary hypertension by which of the following mechanisms?

A Inhibition of cGMP specific phosphodiesterase type 3A

B: Binds endothelin receptors preventing pulmonary artery vasoconst

C: Inhibition of cGMP specific phosphodiesterase type 5A

D: Activates endogenous vasodilators reducing pulmonary hypertens

What is the earliest time frame that one can see a significant decline in pulmonary vascular resistance after implanting an LVAD with no additional medication therapy directed towards pulmonary pressu

A 10 days

B 2 weeks

C 4 weeks

D 6 weeks

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-601 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE ANALYSIS OF ADHERENCE TO A SEPSIS PROTOCOL IN THE INTENSIVE CARE UNIT

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Purpose: The objective of this study is to evaluate the extent to which the sepsis order set is used and corresponding guidelines are followed i the intensive care unit setting.□□Methods: Data will be collected using the computerized medical record and screened using ICD-9 codes; records coded at discharge as 995.91 or 995.92 (systemic inflammatory response syndrome due to infectious process without or with acute organ dysfunction, respectively) during the periods of July 1, 2010 to September 30, 2010 and July 1, 2012 to September 30, 2012 will be considered. Eligible intensive care unit patients must meet two of the following criteria: core temperature greater than 38 or less than 36 degrees Celsius; heart rate greater than 90 beats per minute; respirator rate greater than 20 breaths per minute, PaCO2 less than 32 mmHg, or use of mechanical ventilation; or white blood cell count greater than 12,000 or less than 4,000 per cubic millimeter. Additional inclusion criteria include positive microbial culture or clinical signs and symptoms of infection and one indicator of systemic dysfunction (e.g. hypotension, metabolic acidosis, or nephrologic, cardiac, or respiratory abnormalities) Patients will be excluded if they had an active malignancy, HIV, or a history of solid organ or bone marrow transplant at the time of admission. The primary endpoint will be the frequency of protocol access. The secondary endpoint will be adherence to the order set, assessed using the following criteria: time to initiation of antibiotics and degree of fluid resuscitation prior to vasopressor initiation.□□Results: Data collection and evaluation are in progress. Results to date will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Discuss the evidence for implementing a sepsis protocol or order set.

List the four SIRS (systemic inflammatory response syndrome) criteria.

Self Assessment Questions:

How has implementation of protocols and order sets impacted sepsis-related mortality?

A Implementation has not affected mortality.

B: Implementation has increased mortality.

C: Implementation has not affected mortality, but has decreased mor

D: Implementation has been associated with decreased mortality.

Which of the following is a SIRS (systemic inflammatory response syndrome) criterion?

A Core temperature greater than 39°C or less than 34°C

B White blood cell count greater than 12,000/mm3 or less than 4,00

C Hypotension less than 90 mmHg systolic or less than 60 mmHg di

D Serum creatinine greater than 2 mg/dL

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-602 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

OPTIMIZING PIPERACILLIN-TAZOBACTAM DOSING DURING CONTINUOUS RENAL REPLACEMENT THERAPY USING MONTE CARLO SIMULATION

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Purpose: □Piperacillin-tazobactam is a frequently used, gram-negative antibiotic used at the University of Wisconsin Hospital and Clinics (UWHC) in critically ill patients receiving continuous renal replacement therapy (CRRT). Antimicrobial dosing recommendations for patients on CRRT remains unresolved due to the limited data in this modality. The objective of this study is to optimize the pharmacokinetic/pharmacodynamic profile of piperacillin-tazobactam in CRRT.□□Methods:□Drug concentration data was obtained from a previous study looking at piperacillin use in CRRT patients at the UWHC. The previous study looked at fifteen, critically ill, anuric patients received ultrafiltrate rates of 25, 35 and 45ml/kg/hour (five patients in each group). Total clearance, volume of distribution, and elimination rate constant were calculated using linear kinetics. A 5000 patient Monte Carlo simulation was performed using Crystal Ball Oracle software. Doses of piperacillin-tazobactam evaluated included 2.25 g, 3.375 g, an 4.5 g with 30 min or 4 hours infusion times, and using 6 hour, 8 hour, 12 hour, and 24 hour dosing intervals. Fixed minimum inhibitory concentration (MIC) values ranged from 0.25 to 64 mg/liter. The probability of achieving free piperacillin concentrations greater than the MIC for 50% of the dosing interval (50% f T > MIC) was evaluated for each MIC, dose, dose interval, infusion time, and ultrafiltrate rate.□□Results/Conclusions:□Probability of target attainment results for each dosing strategy and each ultrafiltrate rate will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify variables that affect pharmacokinetics in continuous renal replacement therapy.

Explain the use of monte carlo simulation in the context of pharmacodynamic modeling.

Self Assessment Questions:

Which is true for pharmacokinetics in continuous renal replacement therapy?

A It is affected by volume of distribution

B: It is affected by protein binding

C: It is affected by ultrafiltration rate

D: All of the above

Which is true of Monte Carlo simulation?

A It is magic

B It uses random number generation to account for variability in a pa

C It can help predict drug efficacy in a large simulated population

D Both B and C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-603 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ECHINOCANDINS VERSUS FLUCONAZOLE FOR THE TREATMENT OF CANDIDEMIA IN IMMUNOCOMPETENT, NON-CRITICALLY ILL PATIENTS

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Candida species are the fourth leading cause of nosocomial blood stream infections (BSI) in the United States. Guidelines for the treatment of candidemia are founded on evidence from studies in which a variety of patient populations were represented (i.e. critically ill, non-critically ill, neutropenic and immunocompetent patients). Literature comparing echinocandins to fluconazole for the treatment of candidemia directly in the immunocompetent, non-critically ill has yet to be published.□□This is a multi-center, retrospective study that will compare the efficacy of an echinocandin (micafungin and caspofungin) versus fluconazole for the treatment of candidemia exclusively in immunocompetent, non-critically ill patients. Patients admitted to University of Cincinnati Medical Center (UCMC) in Cincinnati, OH or West Chester Hospital in West Chester, OH with a diagnosis of candidemia between August 2005 and October 2012 will be screened. The investigators will identify cases of candidemia in immunocompetent patients admitted to a general medicine, surgical, or progressive care unit. Patients admitted to one of these units at the time of positive Candida blood culture and who received at least one dose of an intravenous echinocandin or fluconazole will be included in the study.□□The primary outcome of this study is the rate of collective outcome (a combination of microbiological and clinical response) in patients who initially received an echinocandin compared to those who received fluconazole. Secondary outcomes include individual rates of microbiological and clinical response and the rate of conversion to an oral antifungal agent at any time during candidemia treatment. This study also aims to identify risk factors for failure to achieve collective outcome (or treatment failure) as well as the distribution of Candida species from BSIs at University of Cincinnati Medical Center and West Chester Hospital from August 2005 through October 2012.

Learning Objectives:

Outline the existing recommendations for antifungal choice in the treatment of candidemia.

Identify risk factors for candidemia in immunocompetent, non-critically ill patients.

Self Assessment Questions:

The purpose of this study was to compare echinocandins versus fluconazole for the treatment of candidemia in which of the following patient populations?

A Immunocompetent, critically-ill
B: Immunocompromised, critically-ill
C: Immunocompetent, non-critically ill
D: Immunocompromised, non-critically ill

Which of the following is a risk factor for candidemia?

A Enteral nutrition
B Peripheral intravenous access
C Prior antibiotic treatment
D Liver disease

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-604 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF VANCOMYCIN DOSING IN INFANTS LESS THAN 1200 GRAMS AND GREATER THAN 30 DAYS POSTNATAL AGE

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Background: Pre-term infants are at a high risk for nosocomial infections with gram positive bacteria. Vancomcyin is often used for empiric antibiotic therapy. The neonatal intensive care unit (NICU) at Advocate Lutheran General Childrens Hospital (ALGCH) developed a guideline for vancomycin dosing in infants. This guideline utilizes a combination of body weight and postnatal age (PNA) for dosing. For infants weighing less than 1200 grams the recommended dose is weight-based and the dosing interval is constant regardless of PNA. Vancomycin is renally eliminated. The rapid increase in postnatal renal function makes vancomycin dosing challenging in this subset of NICU patients. □□The literature evaluating vancomycin dosing in the NICU is limited and provides conflicting dose recommendations. Most studies were designed to achieve vancomycin serum trough concentrations of 5-15 mg/L. In adults, the recommended vancomycin trough has recently increased from 5-15 mg/L to 10-20mg/L due to trends of increased Staphylococcus aureus resistance. The ALGCH NICU has adopted this higher trough cut-off for vancomycin. The current ALGCH vancomycin dosing guideline for NICU infants may not achieve these higher trough concentrations. □□Purpose: This study evaluates whether the ALGCH vancomycin dosing guideline achieves trough concentrations of 10-20 mg/mL in infants less than 1200 grams and greater than 30 days PNA.□□Methods: This is a retrospective cohort of patients admitted to the ALGCH NICU from September 2007 to November 2012. It evaluates if vancomycin trough concentrations of 10-20 mg/mL were obtained using the current ALGCH vancomycin dosing protocol in infants less than 1200 grams and greater than 30 days PNA.□□Results: Data collection and analysis are in progress; final results will be presented at the 2013 Great Lakes Residency Conference.

Learning Objectives:

State risk factors that increase the risk for nosocomial bacterial infections in NICU infants.

List the reasons why it is difficult to appropriately dose vancomycin in infants less than 1200 grams.

Self Assessment Questions:

A risk factor for nosocomial infections in NICU infants is:

A exposure to invasive treatments such as mechanical ventilation
B: short hospital stays
C: minimal use of central venous catheters
D: well developed immune systems

It is difficult to appropriately dose vancomycin in infants less than 1200 grams because:

A there is an established equation to measure renal function in this p
B this population encompasses infants of many different postnatal a
C there are many vancomycin pharmacokinetic studies in this popula
D vancomycin is not commonly used in this population

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-775 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE ECONOMIC IMPACT OF PHARMACIST INTERVENTIONS IN AN AMBULATORY GENERAL INTERNAL MEDICINE CLINIC AND ASSESSMENT OF PATIENT AND PROVIDER SATISFACTION WITH PHARMACIST INVOLVEMENT

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Statement of Purpose□□The purpose of this pilot program is to measure the economic impact of the interventions made by the clinical pharmacis in an ambulatory general internal medicine clinic and to evaluate the patient and provider satisfaction with pharmacist involvement. □□

Statement of Methods Used□□This is a retrospective pilot study approved by the Marshfield Clinic Investigation Review Board. Up to 250 patients who are at least 18 years of age, have ten or more medications on record, and undergoing a routine physical exam within the Internal Medicine Department at Marshfield Clinic will be enrolled in the project. Non-English speaking patient will be excluded. All medication discrepancies and drug therapy opportunities identified by a clinical pharmacist and communicated to the providers will be evaluated. Medication reconciliation discrepancies will include: unrecorded medications, recorded medications patient is not currently taking, dose/frequency changes, and quantity of prescription versus ove the-counter medication reconciliation discrepancies. The drug therapy opportunities will be categorized relating to indication, effectiveness, safety, and adherence. The pharmacist will review the providers acceptance of the recommendations after the appointment. The economic impact of the clinical pharmacist recommendations will be assigned a dollar value in accordance with the potential adverse drug events avoided modeling work previously published by Burton et al and the Patient Safety and Clinical Pharmacy Services Collaborative (PSPC) model. Patient and provider satisfaction will be measured via survey. Descriptive statistics will be used to evaluate the frequency and type of each outcome. □□Summary of Results to Support the Conclusion□□Results and Conclusions to be presented at the Great Lakes Pharmacy Conference

Learning Objectives:

Discuss the importance of having coordinated care involving clinical pharmacists in the team.

Discuss the purpose of the Patient Safety and Clinical Pharmacy Services Collaborative (PSPC) model.

Self Assessment Questions:

What percent (%) of the United States population is considered to have high medication risk patients needing special coordinated care delivery systems with Clinical Pharmacy Services (CPS)?

A 50%
B: 35%
C: 25%
D: 15%

According to Clinical Pharmacy Services Collaborative (PSPC) model, which one of the following characteristics must a coordinated care delivery system employ to meet the special needs of high medicati

A Quality improvement using a provider registry
B Integrated clinical pharmacy services with outpatient primary care
C Clinical management of patients involving only physicians
D Organization centered method

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-776 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

METRONIDAZOLE PROPHYLAXIS FOR PREVENTION OF C. DIFFICILE IN LUNG TRANSPLANT PATIENTS

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Background: Lung transplant patients are at increased risk for Clostridium difficile infection (CDI). Transplant patients are at higher risk for acquiring CDI based on antimicrobial use, a prolonged hospital stay, recent surgery and immunosuppression. The IDSA/SHEA guidelines do not currently recommend using any drug for prophylaxis of CDI due to a increased risk of medication related side effects and lack of evidence. Cleveland Clinic (CC) lung transplant recipients who meet high-risk criteria receive metronidazole prophylaxis for CDI. This project evaluates the incidence of CDI in high-risk lung transplant recipients with and without metronidazole prophylaxis.□□Objectives: Compare incidence of CDI in high-risk lung transplant patients before and after implementation of a metronidazole prophylaxis protocol□□Methodology: This retrospective chart review will screen adult lung transplant patients at CC from January 2007 - July 2012. High-risk patients receiving > 48 hours of 250 mg metronidazole three times daily will be included. High-risk criteria are hospital stay before transplant, CDI in previous 30 days, extracorporeal membrane oxygenation before or after transplant, immediate post-op (48 hours) need for plasmapheresis, induction therapy or augmented immunosuppression, ICU course or antibiotics > 14 days. Exclusion criteria are use of metronidazole for an infection other than Clostridium difficile or prophylaxis other than the study drug and dose. Data analysis will include descriptive statistics and Chi-squared test (or Fishers Exact test), as appropriate. A Kaplan-Meier curve will evaluate the time to first occurrence of CDI and curves will be compared with the log-rank test. A multivariate analysis will be performed to account for factors identified during the univariate analysis with statistical ($p<0.10$) and biological plausibility and other a priori defined treatment related factors on the primary outcome. The Institutional Review Board approved this study.□□Results and Conclusions: To be presented at the Great Lakes Residency Conference

Learning Objectives:

Identify why transplant patients at an increased risk for acquiring CDI

Recognize what the recommended dose of metronidazole prophylaxis is for Clostridium difficile according to SHEA and IDSA

Self Assessment Questions:

Why are transplant patients at an increased risk for acquiring CDI?

A Infection from donor organs
B: They are not at increased risk
C: Relatively short hospital stay
D: Antimicrobial use

According to SHEA and IDSA treatment guidelines, what is the recommended dose of metronidazole prophylaxis for Clostridium difficile

A Metronidazole 500 mg IV TID
B Vancomycin 125 mg PO QID
C Metronidazole 500 mg PO TID
D No prophylaxis is currently recommended

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-605 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSESSMENT OF PHARMACIST MANAGED SMOKING CESSATION VERSUS USUAL CARE IN A VETERANS AFFAIRS MEDICAL CENTE

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Statement of Purpose: Nearly 70% of current smokers want to quit, but many are unsuccessful in this endeavor. Improvements can be made in the way smoking cessation management is delivered by analyzing current techniques. This objective of this study is to assess the management of smoking cessation by pharmacists versus usual care in a Veterans Affairs Medical Center.□□Statement of Methods Used: Prio to initiating this study, approval was obtained through both the IUPUI IRB and Veterans Affairs Research and Development committee. A computer-generated list was obtained of all patients who received bupropion, varenicline, nicotine patches, nicotine gum, and nicotine lozenges from January 2007-June 2012 at the Richard L. Roudebush VA Medical Center. Patients were randomized in order to obtain 200 patients in the usual care group and 200 patients in the pharmacist managed group. Patients who were at least 18 years of age and receiving smoking cessation management from primary care providers were included in this study. Patients were excluded from the study if they received smoking cessation treatment from providers outside of the primary care clinics or filled prescriptions for smoking cessation aids outside of the VA. The primary outcome of this study is the number of patients who achieved smoking cessation within six months of their initia clinic visit. Secondary outcomes include the percentage of individuals who receive bupropion, varenicline, nicotine patches, nicotine lozenges, and nicotine gum for smoking cessation, the point prevalence of smoking cessation at one month after the initial clinic visit, and the percentage of individuals who decrease the amount of cigarettes smoked per day within six months of the initial clinic visit for smoking cessation. □□Conclusions Reached: Data collection is currently in progress. The results and conclusions of this study will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

List the percentage of Americans who are interested in smoking cessation or have made a quit attempt in the past year.

Review evidence supporting the effectiveness of pharmacological and non-pharmacological therapies for smoking cessation.

Self Assessment Questions:

Based on the most recent information from the CDC, what percentage o smokers have made a quit attempt in the past year?

A 10%

B: 25%

C: 50%

D: 75%

Which one of the following statements is correct regarding the findings of the Durham VA study involving pharmacist managed smoking cessation?

A A difference was initially observed between the bupropion SR and

B A difference was initially observed between the bupropion SR and

C A difference was not initially observed between the nicotine patch

D A difference was not initially observed between the nicotine patch

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-606 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF INTRAVENOUS ACETAMINOPHEN FOR PAIN MANAGEMENT IN BARIATRIC SURGERY PATIENTS

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Purpose:□Published literature shows intravenous acetaminophen may have an effect on pain scores, amount of opioid consumption, and frequency of opioid-related adverse drug reactions in post-surgical patients. The purpose of this study is to evaluate the effect of adding intravenous acetaminophen to the bariatric surgery pain management regimen at Franciscan St Margaret Health. □□Methods:□This study is a retrospective chart review that included patients 18 years of age or older who underwent bariatric surgery before and after the addition of intravenous acetaminophen to the master drug formulary. Patients who received intravenous acetaminophen must receive at least one dose for inclusion. Primary endpoints include the change in patient reported pain scores and opioid consumption during the 24 hour post-surgical period. Secondary endpoints include the change in frequency of opioid-related adverse drug reactions. □□Preliminary Results:□Data for 35 patients who did not receive intravenous acetaminophen and 34 patients who did receive intravenous acetaminophen as part of their post-surgical pain management regimen have been analyzed. Patients who received intravenous acetaminophen reported a lower average pain score (5.3 on a scale 0-10) as compared to patients who did not receive intravenous acetaminophen (6.3) during the 24 hour post-surgical period. In addition, patients who received intravenous acetaminophen consumed, on average, less opioid (17.9 mg of parenteral morphine or equivalent) versus patients who did not receive intravenous acetaminophen (25.1 mg). Patients who received intravenous acetaminophen had less documented episodes of nausea or vomiting, respiratory rate less than 15 breaths per minute, and O2 saturation less than 90%. □□Final Results and Conclusions:□Preliminary results show that patients who received intravenous acetaminophen reported lower pain scores, consumed less opioid, and experienced less opioid-related adverse effects. More data is being collected to increase sample size. Final results will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Review the FDA-approved indications for intravenous acetaminophen

Discuss the role of intravenous acetaminophen for pain management in post-surgical patients

Self Assessment Questions:

Which FDA-approved indication for intravenous acetaminophen requires adjunctive opioid analgesics?

A Management of mild to moderate pain

B: Management of moderate to severe pain

C: Management of fever

D: Management of minor osteoarthritis pain

Compared to the same dose of oral acetaminophen, the Cmax following administration of intravenous acetaminophen is up to _____ higher.

A 30%

B 50%

C 70%

D 110%

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-607 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE IMPACT OF A PHARMACIST ASSESSING DELIRIUM IN THE MECHANICALLY VENTILATED, CRITICALLY ILL PATIENT

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Background: Literature has demonstrated that a delay in prevention, recognition, and treatment of delirium is associated with increased duration of mechanical ventilation, mortality, and long term cognitive deficits. The Society of Critical Care Medicine (SCCM) recommends routine monitoring for delirium using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) in critically ill, mechanically ventilated patients. Despite this recommendation delirium is difficult to diagnose and assess, it often is unrecognized and inappropriately treated. There are limited data regarding the role of the pharmacist assessment of delirium and their potential impact. Purpose: The purpose of this study is for the pharmacist to utilize the CAM-ICU tool to screen subjects daily in order to determine if early identification and prevention of delirium can contribute to a decrease in duration of mechanical ventilation. Methods: A retrospective chart review of subjects mechanically ventilated from November 2011 through November of 2012 in the medical/cardiac (MCICU) and surgical intensive care units (SICU) was performed to serve as a control group prior to the pharmacist implementation of the CAM-ICU tool. The prospective component of the study will consist of a pharmacist implementing the CAM-ICU tool. It will be performed daily during the time when mechanically ventilated, critically ill subjects in the MCICU and SICU undergo a sedation vacation. The sample size was calculated to detect a difference of 1 day on the ventilator between the two study groups. In order to detect a significant difference, a minimum of 150 subjects are needed in each group. The primary endpoint is to determine if pharmacist identification and management of ICU delirium contributes to a decrease in duration of mechanical ventilation at Lutheran General Hospital. Secondary endpoints include: ICU length of stay, ICU mortality, appropriateness, dosing and monitoring of sedation and analgesia, and pharmacological management of delirium.

Results/Conclusions: In progress.

Learning Objectives:

Describe the potential role of the pharmacist in the identification and treatment of delirium in the critically ill patient.

List the four categories within the Confusion Assessment Method for the ICU for the diagnosis of delirium.

Self Assessment Questions:

Which of the following statements is correct?

A Delirium is associated with an increased duration of mechanical ve
B: There is a significant increase in mortality in patients that experien
C: There is significant long term sequelae associated with delirium in
D: All of the above.

Which of the following combinations results in a positive CAM-ICU assessment?

A Acute change or fluctuating course of mental status, inattention, a
B Inattention, Altered level of consciousness, and disorganized think
C Acute change or fluctuating course of mental status, inattention, a
D Both A & C

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-777 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPLEMENTATION AND EVALUATION OF A BEDSIDE MEDICATION STORAGE SYSTEM

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The pharmacy department at the University of Wisconsin Hospital and Clinics (UWHC) utilizes a hybrid medication distribution system with the majority of scheduled doses dispensed from the central inpatient pharmacy into patient-specific drawers as part of a daily cartfill process. As a supplement to the cartfill, technicians perform hourly delivery runs to hand-deliver first doses of medications to the patient care unit. Medications and necessary preparation supplies are stored within a centrally-located, secure medication room - scheduled medications in patient drawers, narcotics and as needed medications in automated dispensing cabinets, and refrigerated medications and large volume parenterals in close proximity to patient drawers. For several years, the nursing department at UWHC has expressed interest in trialing bedside medication storage to determine if this can increase nursing efficiency, satisfaction, and time available to spend at the patients bedside. The purpose of this project is to implement secure bedside storage of medications on two pilot units and investigate the impact on staff satisfaction, patient experience, system efficiency, and labor cost.

A resident-led interdisciplinary performance improvement team was developed to design, implement, and evaluate the impacts of the pilot. For each data element, pre- and post-implementation data are being collected. Direct observation time studies and nurse-reported work sampling are being used to determine time spent on various activities: nurse time spent on medication preparation, nurse time spent on medication distribution, pharmacy technician time spent on medication distribution, nurse time spent at bedside, the number of nurse trips to the medication room, total nurse footsteps per shift, and total distance traveled for medication-related activities. Surveys are being distributed to assess nurse, pharmacist, and pharmacy technician satisfaction before and after the pilot. Additionally, a separate survey will assess patient satisfaction with nurse availability and accessibility. Results and conclusions of the pilot to be determined.

Learning Objectives:

Identify the pros and cons of storing medications at bedside

Discuss the changes in labor resources necessary to support storing medications at bedside

Self Assessment Questions:

What is one of the potential benefits of storing medications at the bedside?

A Patients can bring in their home medications and self-administer
B: Barcode medication administration is unnecessary
C: Saves nurses time and trips back and forth to the medication roon
D: Increased opportunity for diversion because medications are not s

In the pilot completed at UWHC, the delivery of medications to the bedside was the responsibility of:

A Nurses
B Chief financial officer
C Pharmacy technicians
D Pharmacy administrative residents

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-778 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF THE POTENTIAL USE OF HYDROXYETHYL STARCH 130/0.4 IN AN URBAN TEACHING HOSPITAL

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Purpose Hydroxyethyl starch 130/0.4, a synthetic colloid, is a novel tetrastarch approved for treatment of hypovolemia. Comparisons of crystalloids, synthetic colloids, and albumin have been extensively studied with the role of synthetic colloids and albumin in specific populations remaining unclear. Previously at this urban teaching hospital, guidelines for the appropriate use of albumin were formulated to curtail inappropriate use. Reduction of albumin use was observed; however the opportunity for use of the lower cost hydroxyethyl starch 130/0.4 (tetrastarch) was never addressed. The focus of this study will be to identify opportunities and areas for appropriate use of tetrastarch for hypovolemia, with the goal of a further reduction in albumin use, and a realization in cost savings with tetrastarch over albumin.

Methods Initially, a literature review was conducted to determine appropriate alternatives to albumin. A retrospective medical record evaluation of albumin use was conducted to identify potential indications for tetrastarch use. The results of the evaluation were delineated by those potential uses. Development of colloid, focusing on tetrastarch, guidelines was based on results of the usage evaluation and the literature review. After guideline implementation, there is a plan to monitor tetrastarch use for appropriateness. The study was approved by the Institutional Review Board prior to initiation. Preliminary Results and Discussion The preliminary evaluation identified the opportunity for tetrastarch use at this institution. The evaluation identifiec 116 patients as having received albumin over a 6 month period in 2012. The most common uses of albumin were in cardiopulmonary bypass surgery (30) and general surgery (14). An opportunity for intra-operative and peri-operative use of tetrastarch was identified: cost-savings can be realized by this institution. The Pharmacy and Therapeutics Committee, analyzing the literature review in conjunction with the results, approved the proposed guidelines. A follow-up evaluation of the use of tetrastarch will be conducted.

Learning Objectives:

Identify potential uses of hydroxyethyl starch 130/0.4

Discuss pros and cons of synthetic colloid and albumin use for hypovolemia

Self Assessment Questions:

Due to a recent large randomized controlled trial, which patient population is use of hydroxyethyl starch 130/0.4 not recommended?

A Patients undergoing coronary artery bypass graft surgery
B: Pediatrics
C: Patients with sepsis
D: Geriatrics

What are the two most prevalent side effects of hydroxyethyl starch 130/0.4?

A Pruritus and Renal Impairment
B Neuropathy and Coagulopathy
C Renal Impairment and Neuropathy
D Coagulopathy and Pruritus

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-608 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

IMPACT OF AN EMERGENCY DEPARTMENT ORDER SET ON THE USE OF ESMOLOL FOR PATIENTS WITH AORTIC DISSECTION

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Background. Patients with aortic dissection demand immediate treatment in order to minimize further stress on the aortic wall. Guidelines suggest treatment utilizing intravenous medications, such as esmolol. This agent possesses a narrow therapeutic index and requires close monitoring. An order set was developed for use in the Emergency Medicine and Trauma Center (EMTC) at Indiana University (IU) Health Methodist Hospital in January 2011 to assist in management of esmolol. However, the use of this tool is not mandatory. A study was conducted to analyze the impact of this intervention in the EMTC. The study objective was to determine usage patterns of intravenous esmolol in the setting of aortic dissection before and after implementation of the order set. The need for additional vasoactive agents in order to achieve goal blood pressure, adverse effects and 28-day mortality were also analyzed. Methods. The study was a retrospective chart review of patients who received esmolol for aortic dissection from January 2010 tc April 2012, with a three-month washout period from January to March 2011. Treatment was considered excessive, appropriate or failed based upon reduction in systolic blood pressure (SBP) at time of 0, 20 and 60 minutes after treatment initiation. Order set adherence was determined by documented bolus dosing, drip rate, and titration parameters. Additional vasoactive agents were recorded if initiated within 60 minutes of esmolol treatment. Adverse effects analyzed were hypotension (SBP < 90 mmHg), bradycardia (heart rate < 50 beats per minute) and tachycardia (heart rate > 100 beats per minute).

Results/Conclusions. Pending based on ongoing data collection. Results and conclusions to be presented at the Great Lakes Pharmacy Residency Conference in April 2013.

Learning Objectives:

Identify risks associated with administration of intravenous vasoactive agents in an emergency department.

Recognize adverse effects associated with the administration of esmolol

Self Assessment Questions:

Which of the following increases the risk of adverse effects associated with the administration of intravenous vasoactive agents in an emergency department?

A Wide therapeutic index of agents
B: Busy environment of an emergency department
C: Increased familiarity with administration
D: Infrequent monitoring requirement

Which of the following is a dose-related adverse effect that may be associated with esmolol administration?

A Hypertension
B Diarrhea
C Bradycardia
D Angioedema

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-609 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE PERCEPTION AND UTILIZATION OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) IN BREAST, COLON, LUNG, AND PROSTATE CANCER PATIENTS

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Purpose: Several studies have indicated utilization of Complementary and Alternative Medicine (CAM) amongst cancer patients is higher than the general public. Cancer patients seek CAM to improve their well-being, prevent cancer progression or treat disease, gain a sense of control over their health, boost immunity, and manage side effects of conventional antineoplastics. False perceptions regarding CAM are common. Consumers commonly consider CAM safe and effective, although scientific evidence proving such is inconclusive. This study is to determine the perception and utilization of complementary and alternative medicine (CAM) in breast, colon, lung, and prostate cancer patients. Methods: This was an IRB approved, retrospective chart review that identified patients diagnosed with breast, colon, lung and prostate cancer within the previous 6 months at the James Graham Brown Cancer Center. All eligible patients from October 2012 to March 2013 were invited to respond to a one-time questionnaire during their clinic visit on complementary and alternative medicine. The primary endpoint was to study the perception of breast, lung, colon, and prostate cancer patients regarding the safety and efficacy of CAM. The secondary endpoints were to determine the prevalence and pattern of CAM usage between different cancer types and to explore the association between various characteristics of each cohort such as socio-demographic factors and insurance coverage. Results: To be presented at GLPRC (Great Lakes Pharmacy Resident Conference).

Conclusion: To be presented at GLPRC

Learning Objectives:

Identify misconceptions regarding the safety and efficacy of CAM amongst breast, lung, colon, and prostate cancer patients

Indicate the prevalence and pattern of CAM usage amongst breast, lung colon, and prostate cancer patients and socio-demographic factors that influence such usage

Self Assessment Questions:

Which of the following is a common misconception regarding the safety and efficacy of CAM?

A Manufacturers of herbals must prove their products are safe and e
B: Herbals are NOT regulated by the Food & Drug Administration (FD
C: Herbals may be contaminated with bacteria
D: Herbals may contain heavy metals

Which of the following cancer populations are most likely to use CAM?

A Prostate cancer patients
B Lung cancer patients
C Breast cancer patients
D Colon cancer patients

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-779 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT ON MEDICATION ERRORS AND CLINICAL INTERVENTIONS BY OPTIMIZING ALERTS UPON ORDER ENTRY & VERIFICATION

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Purpose: Clinical decision support systems are used with the intention of enhancing patient safety by alerting physicians and pharmacists of recommendations to prevent medication errors. However, what is intended to be a clinical tool may overwhelm a pharmacist with an increasing number of alerts, leading to desensitization and alert fatigue. In theory, by minimizing the number of alerts seen upon order entry and verification, there should be an increase in the value of alerts that do populate. The purpose of this study is to view the effect of optimizing the number of significant laboratory test alerts upon order entry and verification on missed opportunities for clinical interventions made by a pharmacist. Methods: The initial step of this process was evaluating each medication to optimize the laboratory values that populated upon order entry and verification. Once this was implemented, orders for ten medications with clear evidence for contraindications with abnormal labs were reviewed for pharmacists interventions two months prior and two months post implementation. If no intervention was made on an order with a lab out of range, the medication was reviewed by the Medication Safety Officer to determine if a medication error had occurred. A survey was used to measure pharmacists satisfaction to the change as secondary outcome. Results/Conclusions: Data collection is in progress; results and conclusions will be presented at Great Lakes Residency Conference.

Learning Objectives:

Discuss the benefits of clinical decision support systems

Outline the causes of order entry fatigue

Self Assessment Questions:

Benefits of clinical decision support systems include:

A Protocol/pathway support to help prescribers follow guidelines and
B: Automated adverse drug event detection based on patient sympto
C: Alerts and reminders for drug-drug interactions or allergies
D: All of the above

Increasing the number of alerts viewed upon medication order entry may lead to:

A Missed opportunities for clinical interventions
B Delivering important information to pharmacists pertaining to that r
C Neither A or B
D Both A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-855 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

OUTCOMES OF KIDNEY DONORS RECEIVING KETOROLAC VERSUS NON-KETOROLAC BASED PAIN REGIMENS

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Kidney transplantation is the only cure for end-stage renal disease. Outcomes in organ recipients are better if the organ is from a live donor as compared to a deceased donor. In 2009, 46.8% of kidneys transplanted were from living donors. As people donate kidneys to help others rather than themselves, it is imperative to ensure donor nephrectomy is relatively free of complications. Pain medications used post-nephrectomy have complications such as nephrotoxicity with ketorolac or constipation and post-operative ileus with opiates. Using ketorolac with opiates for breakthrough pain rather than opiates alone fo open donor nephrectomy has been shown to decrease hospital length of stay; however, the effect of these medications in patients undergoing robotic laparoscopic nephrectomy has not been reported. The purpose of this study is to compare outcomes in kidney donors when ketorolac with opiates for breakthrough pain is used versus using opiates alone in patients undergoing robotic laparoscopic donor nephrectomy. The study is designed as a retrospective cohort study. Donors will be divided into two groups: those that received ketorolac and those that did not. Long term complications will be assessed within the first six months afte donor nephrectomy. Subjects include patients that have undergone donor nephrectomy at University of Illinois Hospital and Health Sciences System between the dates of January 1, 2007 and August 30, 2012. The primary outcome of this study is hospital length of stay. Another outcome of interest is the effect of ketorolac use on donor renal function from baseline during the hospital stay and also during a follow up visit up to six months later. Lastly, to assess for other complications, time to return of bowel function and total opiate requirements for donation admission will be assessed. A subgroup analysis will be conducted to assess the effect of race on complications.

Learning Objectives:

Describe the importance of donor nephrectomy

Discuss the complications associated with medications used for pain control post-nephrectomy

Self Assessment Questions:

Which of the following is true about donor nephrectomy?

A It is a curative surgery for renal cell carcinoma and other renal patl

B: Less complications occur when open donor nephrectomy is condu

C: Post-operative ileus is not a concern with laparoscopic donor neph

D: Serious complications including death can still occur with laparosc

Which of the following is true regarding medications used to treat pain after open donor nephrectomy?

A Opiates decrease the time to return of normal bowel function

B Chronic pain at the site of incision occurs more often in patients th

C Renal dysfunction associated with ketorolac appears to be transier

D Intravenous acetaminophen has been studied extensively in this p

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-610 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

VALIDATION OF A HIGH DOSE VANCOMYCIN NOMOGRAM AND RISK FACTOR ANALYSIS OF SUPRATHERAPEUTIC CONCENTRATIONS AND NEPHROTOXICITY

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Guidelines released by The Infectious Disease Society of America recommend a vancomycin trough goal of 15 to 20 ug/ml for bacteremia, osteomyelitis, central nervous system infections, pneumonia, infective endocarditis and severe skin and soft tissue infections caused by methicillin-resistant Staphylococcus aureus (MRSA). However, there is limited literature describing successful empiric dosing strategies to achieve these goal troughs. In addition, many studies emphasize an increased risk of vancomycin induced nephrotoxicity when aiming for higher troughs. In 2011, the University of Michigan Health System (UMHS) developed a high dose vancomycin nomogram to achieve troughs between 15 to 20 ug/ml. The primary objective of this study is validation of the UMHS high dose vancomycin nomogram. Secondary objectives are to quantify incidence of nephrotoxic rates, evaluate risk factors for nephrotoxicity, and characterize vancomycin accumulation. This single centered, retrospective study included UMHS patients greater than 18 years of age who were initiated on vancomycin treatment using the high dose nomogram between July 1, 2011 and June 30, 2012. Patients with creatinine clearance less than 25 mL/min, on any form of dialysis, or without a steady state vancomycin trough were excluded. Age, height, weight, serum creatinine, vancomycin loads, vancomycin dosing regimen, number of doses, vancomycin trough(s), and the concomitant use of nephrotoxic agents of all included patients were collected. Nephrotoxicity was defined using the RIFLE criteria. Patients maintained on their initiation vancomycin dosing regimen were also assessed for accumulation. Data collection has been completed and analysis is currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify methicillin-resistant Staphylococcus aureus infections where a trough of 15 to 20 ug/ml would be appropriate.

Recognize potential risk factors for vancomycin nephrotoxicity

Self Assessment Questions:

Which of the following infection types does the Infectious Disease Society of America recommend a vancomycin trough of 15 to 20 ug/ml?

A Intra-abdominal infection

B: Meningitis

C: Uti

D: Cellulitis

Which of the following statements is correct?

A Vancomycin nephrotoxicity is rare and tends to be irreversible.

B Vancomycin nephrotoxicity occurs less often than vancomycin oto

C Vancomycin nephrotoxicity is associated with higher vancomycin t

D Vancomycin nephrotoxicity is less common with concomitant amin

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-780 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

INCIDENCE, ETIOLOGY, AND OUTCOMES ASSOCIATED WITH ANEMIA DURING LONG-TERM SUPPORT WITH CONTINUOUS-FLOW LEFT VENTRICULAR ASSIST DEVICES

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Purpose: The purpose of this study is to define the prevalence of anemia in continuous-flow left-ventricular assist devices (CF-LVAD) patients pre- and post-device implantation through the first year of support; characterize the common etiologies of anemia during long-term CF-LVAD support; and determine the impact of anemia on health-related quality of life and outcomes of patients with CF-LVAD implantation.

Methods: This retrospective cohort included patient implanted with HeartMate II or HeartWare device for end-stage heart failure between January 1, 2008 and August 1, 2011 at our institution. Patients excluded from the study were less than 18 years of age or who received post-implantation care at another institution. Data collected included patient characteristics, renal function, device type, date of implantation, duration of device (bridge-to-transplant or destination therapy), anemia treatment and cause, quality of life (QOL) characteristics, and readmission diagnosis within the first year of device support. The primary outcome of the study was the percentage of patients with anemia prior to CF-LVAD implantation and at 90 day follow up. Secondary outcomes included differences between rates of readmission to the hospital for potential anemia-related symptoms between patients with and without anemia during the 360 day follow-up period, documented source of anemia, and the change in pre- and post-implantation QOL scores between those with and without anemia at 90 days. Categorical data was compared using Chi square or Fishers exact test; continuous data was compared using Students t or Mann-Whitney U tests, as appropriate. A $p<0.05$ was considered significant for all comparisons.

Learning Objectives:

Describe the prevalence and etiology of anemia pre- and post-continuous flow LVAD implantation.

Identify the impact of anemia on quality of life in continuous-flow LVAD patients post-device implantation.

Self Assessment Questions:

What are the most common etiologies of anemia in continuous-flow LVAD patients?

A Gastrointestinal bleed

B: Device-related hemolysis

C: Chronic kidney disease

D: A & b

What anemia-related treatment strategies are available for continuous-flow LVAD patients?

A Intravenous or oral iron

B Blood transfusions

C Erythropoietin stimulating agents

D All of the above

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-611 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

TEACHING CERTIFICATE PROGRAM TEN YEAR ALUMNI SURVEY FOR PHARMACY RESIDENTS

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PURPOSE: Previous assessments have provided insight into the perceived benefits of teaching certificate programs (TCP) for pharmacy residents, however little is known about how professionals incorporate their teaching education into current practice. The purpose of this study is to describe the impact and application of a teaching certificate program on up to ten years of past participants job positions.

METHODS: Eligible participants will be alumni of the University of Wisconsin-Madison (UW) School of Pharmacys Teaching Certificate Program for Pharmacy Residents within the past 10 years. Participants will be surveyed using a web-based survey. The alumni survey will serve to capture past program participants overall teaching and precepting confidence, application of the teaching program materials, and their current work setting. Data will be analyzed using descriptive statistics. RESULTS/CONCLUSION: The results and conclusion are pending.

Learning Objectives:

Identify the availability of teaching certificate programs as a component of pharmacy residency post-graduate training.

Recognize the impact teaching certificate programs have on preparing residents for academic careers and exposing them to the fundamental elements for effective teaching.

Self Assessment Questions:

According to a 2010 national survey, what percent of accredited residency programs reported having a formal teaching program available as a residency component?

A 85%

B: 40%

C: 30%

D: 12%

To date, assessments of teaching certificate programs (TCP) have shown which of the following?

A TCPs aid in the procurement of job positions post-residency trainir

B TCPs provide residents with more frequent teaching experiences.

C TCPs provide residents with more frequent precepting experiences

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-781 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECTIVENESS OF A POST-DISCHARGE EMAIL MEDICATION EDUCATION PROGRAM FOR ACUTE MYOCARDIAL INFARCTION PATIENTS

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After an acute myocardial infarction (AMI), patients have an increased risk of death, heart failure, reinfarction, and stroke. Patients receive five medications at discharge to reduce these risks. These include: aspirin, a P2Y12 receptor antagonist, a statin, a beta blocker, and an ACE-inhibitor. If patients were not on these medications prior to admission, they have the potential for receiving five new medications at discharge. Patients receive limited information regarding these medications at discharge and patients often feel they need more medication education after an AMI. Benefits of patient education include: decreased adverse drug events, improved medication adherence, and improved patient satisfaction. Novel education strategies are needed to improve patients understanding regarding their medications after discharge. The objective of this study is to determine the effectiveness of a post-discharge email education program. This prospective, randomized, controlled study includes adult patients discharged to home from the University of Michigan Hospital after an AMI. Patients are excluded if they do not have access to email, if they are not mentally competent to participate, or if they do not speak or read English. Patients are randomized to receive standard education or standard education plus post-AMI email education. All patients receive a baseline knowledge assessment prior to discharge. The email education program includes four emails within four weeks of discharge. Each email is dedicated to a specific drug class (antiplatelets, beta blockers, ACE-inhibitors, or statins). A final email includes a post-education quiz to assess the patients knowledge regarding the post-AMI medications compared to the baseline assessment. It also includes a short satisfaction survey. Patient utilization of the email education is also assessed. Data collection and analysis are currently ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe the medication regimen used after an acute myocardial infarction including the Joint Commission and CMS Core Measures for AMI requirements

Discuss the benefits of patient education

Self Assessment Questions:

The Joint Commission and CMS Core Measures for AMI requirements include all the following medications at discharge EXCEPT:

A A statin
B: A beta blocker
C: Aspirin
D: A P2Y12 antagonist

Patient education is associated with which of the following?

A Improved medication adherence
B Improved patient satisfaction
C Increased adverse drug events
D Both A and B

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-782 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFECT OF A WARFARIN INITIATION ORDER SET ON THE RATE OF SUPRATHERAPEUTIC INRS

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Purpose: The primary purpose of this study is to compare the rates of supratherapeutic INRs before and after the implementation of a standardized warfarin order set that restricts loading doses based on a patients risk of bleeding at Borgess Medical Center (BMC). Methods: A preliminary analysis of the charts of 35 patients who received at least one loading dose of warfarin 10 mg during day one or two of initiation was completed. The charts were retrospectively analyzed to determine the rate of supratherapeutic INRs within 5 days of initiation. Based on the results of this preliminary analysis, an intervention was clearly necessary. An order set was created and implemented at BMC which restricts the loading dose to a maximum of 7.5 mg based on a patients risk of bleeding. Charts of 100 patients at BMC receiving warfarin prior to the order set will be analyzed for rates of coagulopathy. After implementation of the order set, charts of another 100 patients administered warfarin will be reviewed. The data between pre and post order set will be analyzed to compare the rates of supratherapeutic INRs. Results/Conclusions: Out of the 35 patients who received at least one high loading dose of warfarin during initiation, 20% had at leas one INR of > 3. Further data collection and analysis are still being conducted. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

List the risk factors associated with the use of vitamin K antagonists

Describe the coagulation properties of the vitamin K dependent factors

Self Assessment Questions:

Which of the following patients are at a higher risk of bleeding when taking vitamin K antagonists?

A Patients with hypertension
B: Patients who are obese
C: Patients with renal insufficiency
D: Both A & C

By inhibiting the vitamin K dependent factors, what inhibited factor(s) is associated with the initial INR increase within the first 1-2 days?

A Factor X
B Factor VII
C Factor II
D Factor IX

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-856 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

RISPERIDONE LONG-ACTING INJECTABLE VERSUS PALIPERIDONE PALMITATE FOR COMMUNITY-DWELLING PATIENTS WITH SCHIZOPHRENIA

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Purpose: Studies indicate that poor medication compliance is often a hindrance to positive treatment outcomes in patients with schizophrenia. Risperidone long-acting injectable (RLAI) and paliperidone palmitate (PP) may aid patient compliance as they are given once every two or four weeks, respectively. As the two formulations have similar pharmacologic and pharmacokinetic properties, further evaluation is required to determine whether there exist any clinically significant differences in patient outcome and any potential impact of these differences. The purpose of this study is to determine whether patients with schizophrenia who receive PP experience fewer psychiatric-related emergency department visits, assisted living placements, and/or hospitalizations than patients who receive RLAI.□□Methods: A retrospective cohort chart review will be conducted on all patients who had an encounter with Bronson Battle Creeks (BBCs) emergency department, psychiatric units, or general hospital with psychosis-influenced conditions while receiving or were subsequently prescribed RLAI or PP from 1/1/2011 to 12/31/2012. Psychosis-influenced conditions were defined as accidental or intentional self-harm due to psychiatric illness. Exclusion criteria include patients under the age of 18 years or patients having significant co-morbid physical health problems. Demographic data, time to discontinuation of study drugs, number of hospitalization days, number of emergency department visits, administration compliance, and cost of therapy will be analyzed. The primary objective of this study is to determine the number of hospitalization days and emergency department visits in patient-years for BBC patients who receive PP compared with RLAI. Secondary objectives include comparison with published RLAI/PP efficacy data with BBC data, total cost of therapy, time to discontinuation, and therapy compliance. A subgroup analysis will be conducted with patients matched according to age, gender, and disease course. All methods employed are currently undergoing local IRB review.□□Results/Conclusions: Data collection is ongoing. Data will be presented at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the similarities and differences in pharmacology, cost, and administration between PP and RLAI

Identify which patient populations may benefit from initiation of PP or RLAI and what factors may guide selection of a specific agent

Self Assessment Questions:

What is the primary benefit of IM administration of atypical antipsychotics over oral?

A Reduced cost
B: Fewer side effects
C: Greater compliance
D: Higher patient acceptance

What is the main difference between RLAI and PP?

A RLAI is a typical antipsychotic, PP is atypical
B RLAI is administered every 2 weeks, PP is administered every 4 w
C Oral therapy should be continued for the first 3 weeks of therapy w
D RLAI should not be used in patients with a CrCl < 50 mL/min

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-612 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPING, IMPLEMENTING, AND EVALUATING AN EXTENDED INTERVAL AMINOGLYCOSIDE PROTOCOL AT A COMMUNITY TEACHING INSTITUTION

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Purpose:□Extended interval aminoglycoside dosing (EIAD) has been shown to be as safe and effective as traditional dosing. It has also been proven to be cost-effective. At Beaumont Health System-Troy, pharmacists are responsible for dosing all aminoglycosides; however, there is not a formal standardized protocol for dosing aminoglycosides with extended intervals. Results from a previous medication use evaluation (MUE) revealed that EIAD was used only 35% of the time for eligible patients. From this data, we observed an opportunity to increase the use of EIAD at our institution. The objective of this study was to develop an EIAD protocol and evaluate protocol compliance and feasibility.□Methods:□The first step was to evaluate the inpatient clinica pharmacists experience, knowledge, and opinions regarding EIAD via ar anonymous electronic survey. Prior to implementation of a standardized protocol, pharmacists were also asked to track the amount of time spent dosing and evaluating aminoglycoside levels using their current practices. A literature-based EIAD protocol was developed utilizing the Hartford nomogram as a template. The protocol included criteria for use, dosing, and monitoring. Results of the survey were utilized to develop an educational program for pharmacy staff. Pharmacists were provided education on the background of EIAD including data indicating decreased therapeutic drug monitoring and decreased cost, case studies, frequently asked questions, and the developed EIAD protocol. Ongoing education and case evaluations were provided to the pharmacists on a weekly basis. Compliance with the protocol was evaluated after six weeks. A follow-up survey was conducted after six weeks to assess the feasibility of the protocol. □Summary:□To be discussed at the Great Lakes Pharmacy Residency Conference□Conclusion:□To be discussed at the Great Lakes Pharmacy Residency Conference

Learning Objectives:

Review the benefits of EIAD

Describe the implementation process of EIAD at our institution

Self Assessment Questions:

Which of the following are potential benefits to EIAD?

A Decreased toxicities
B: Decreased cost
C: Decreased therapeutic drug monitoring
D: All of the above

What weight-based dose did our protocol use for extended interval dosing?

A 1-2 mg/kg
B 2-4 mg/kg
C 4-5 mg/kg
D 5-7 mg/kg

Q1 Answer: D Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-783 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PATIENT INTEREST IN IPAD APPLICATIONS FOR HEALTH-RELATED EDUCATION

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Purpose: Currently, there is limited published information evaluating the utilization of mobile applications (apps) as patient education tools. The study surveyed ambulatory patients regarding the use of an iPad app for patient education to (1) quantify patient interest, (2) determine desirable features and (3) determine if a relationship exists between patient variables and interest in an iPad app for patient education.□□Methods : Patients were recruited to complete a written survey. The survey comprised of 19 multiple-choice questions and one open-ended question for general comments. It was administered to consenting patients at two pre-determined clinics. To ensure a standardized baseline level of knowledge, a laminated information card titled "What is an iPad?" was provided to the patient after the patients knowledge of an iPad was assessed. A sample size of 120 surveys was calculated in order to investigate the relationship between certain patient demographics and an interest in an iPad app. There are nine variables of interest: chronic disease state(s), perceived level of health, knowledge of an iPad, types of technology used, age, sex, race/ethnicity, level of education, type of health insurance. Inferential statistics will be conducted using Chi-square for dichotomous variables. Mann-Whitney U or Kruskal Wallis will be used for ordinal data. Descriptive statistics will be reported for all parameters.□□Results: Data collection and data analysis are currently in progress.□□Conclusion: Conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the advantages of using an iPad app for patient education.

Recall gaps in literature related to the use of an iPad app for patient education.

Self Assessment Questions:

An iPad is a/an:

A Blood sugar monitor

B: Blood pressure cuff

C: Portable tablet computer

D: External hard drive

Compared to traditional, written patient education, an iPad app is able to

A Transmit communication between patients and providers

B Play audio and/or video clips

C Read educational materials aloud

D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-784 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE EFFICACY OF CALCITRIOL, DOXERCALCIFEROL, AND CINACALCET IN LOWERING PARATHYROID HORMONE LEVELS IN CHRONIC KIDNEY DISEASE PATIENTS

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Background: □Secondary hyperparathyroidism (SHPT) is a common complication of chronic kidney disease (CKD). Decreased active vitamin D production, decreased serum calcium, and increased serum phosphorus lead to overactive parathyroid glands and increased secretion of parathyroid hormone (PTH). The consequences of elevated PTH include renal osteodystrophy and vascular calcification. In order to prevent complications, the management of SHPT involves the use of active vitamin D therapy or a calcimimetic such as cinacalcet.□□Purpose: □The purpose of this study is to compare the effects of calcitriol, doxercalciferol, cinacalcet, and either agent in combination with cinacalcet on elevated PTH levels in patients with chronic kidney disease Stages 3, 4, and 5. □□Methods: □This is a retrospective chart review of 80 randomly selected adult patients with CKD Stage 3, 4, and 5 admitted to Beaumont Royal Oak from January 1 to December 31, 2012. Patients will be included if they are on calcitriol, doxercalciferol, cinacalcet, or either vitamin D analog in combination with cinacalcet for at least one year. Twenty patients will be identified for each of the four treatment groups. Patients will be excluded if they have primary hyperparathyroidism or if they change CKD stage during the year. The primary endpoint is the percent of patients who achieve a target intact PTH (iPTH) level according to the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF KDOQI) within one year of starting therapy. Secondary endpoints include: the percent of patients with a reduction in iPTH > 30% from baseline; incidence of renal osteodystrophy and vascular calcification. Data collection will include: patient demographics, use of phosphate binders, baseline and serial iPTH, calcium, phosphorus, 25-hydroxyvitamin D, albumin levels; corresponding calculated corrected calcium and calcium phosphorus levels.□□Results/Conclusion: □This study is under investigation with results and conclusion to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the role of vitamin D in the pathophysiology of metabolic bone disease in patients with chronic kidney disease

Review current guidelines for vitamin D therapy in chronic kidney diseas

Self Assessment Questions:

In chronic kidney disease patients, decreased production of active vitamin D leads to which of the following?

A Increased serum calcium, increased PTH

B: Increased serum calcium, decreased PTH

C: Decreased serum calcium, increased PTH

D: Decreased serum calcium, decreased PTH

Which of the following is the target range for iPTH (pg/mL) in patients with CKD Stage 4 according to the NKF KDOQI guidelines?

A 35-70

B 70-110

C 110-150

D 150-300

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-613 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACOKINETIC EVALUATION AND IMPACT OF HYPOALBUMINEMIA IN PATIENTS RECEIVING ONCE DAILY CEFTRIAXONE

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Purpose: Ceftriaxones bactericidal activity is time-dependent and correlates with the percentage of time that the unbound drug concentration exceeds the minimum inhibitory concentration (MIC) for specific bacterial pathogens. The T > MIC goal of beta-lactam antibiotics is between 60-70%. Ceftriaxone is highly protein bound (85-95%), potentially resulting in altered pharmacokinetics (PK) in hypoalbuminemic patients. An increased unbound fraction may lead to increased total volume of distribution and clearance of ceftriaxone, resulting in lower antibiotic concentrations and failure to achieve the T > MIC goal. The evaluation of PK and pharmacodynamic (PD) parameters of once daily ceftriaxone may promote dosing regimen optimization.

The primary aim is to determine the time that unbound ceftriaxone concentrations are greater than the MIC (T > MIC) for once daily dosing in acutely ill patients. The secondary aim is to evaluate the influence of hypoalbuminemia on ceftriaxone clearance and T > MIC.

Methods: This study is an investigator-initiated, single-center, prospective study evaluating once daily ceftriaxone dosing and the effec of hypoalbuminemia on PK and PD parameters. Adult patients admitted to the medical intensive care unit or a general medicine floor receiving ceftriaxone 1 or 2 grams intravenously once daily will be evaluated for inclusion. Informed consent will be obtained for all study patients. Two blood samples will be drawn from each patient and unbound ceftriaxone concentrations will be measured with high performance liquid chromatography. The PK and PD results will be used to suggest appropriate ceftriaxone dosing regimens to achieve the established time above the MIC goal based on patient and population specific factors. Results: Data collection and analysis are on-going.

Learning Objectives:

Name the most appropriate pharmacodynamic target for beta-lactam antibiotics.

Discuss the relationship between drug concentration and maximal bactericidal action for beta-lactam antibiotics.

Self Assessment Questions:

Which pharmacodynamic target is associated with optimal dosing of beta-lactam antibiotics?

A Cpk/MIC

B: T > mic

C: Auc

D: Auc/mic

Which drug concentration represents maximal bactericidal action for beta-lactam antibiotics?

A Mic

B 2-3 x MIC

C 4-5 x MIC

D 10 x MIC

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-614 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACY-DRIVEN OPTIMIZATION OF MEDICATION MANAGEMENT AND COMMUNICATION AT HOSPITAL DISCHARGE

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Background: Pharmacist involvement in the discharge process reduces medication discrepancies and promotes safe and effective medication use. In September 2011, Froedtert Hospital integrated the pharmacist into the discharge process, with pharmacists providing medication reconciliation for all patients at discharge. Since that time, opportunities to optimize the quality of medication services at discharge have been identified. Purpose: The purpose of this project is to streamline the discharge process and to improve warfarin safety and efficacy. Interventions implemented include collaborative practices allowing inpatient pharmacists to modify and interchange select medications at discharge and a warfarin discharge summary note. Methods: The impact of the interventions will be measured on three inpatient units (cardiology, orthopedic surgery, general medicine) during a seven-day pre-intervention and seven-day post-intervention period. Patients discharged on warfarin and receiving follow-up at a Froedtert Anticoagulation Clinic will be included in an additional analysis.

Outcomes measured for all discharges include number of pharmacist to prescriber calls per discharge reconciliation, number of clarifications per discharge reconciliation, and pharmacist time spent per discharge reconciliation. Additional outcomes measured for warfarin discharges include percent of patients discharged on warfarin who achieved their target INR within 30 days of hospital discharge and the percent of patients discharged on warfarin who experienced an anticoagulation misadventure (defined as any INR > 5, bleeding or thrombotic event, warfarin-related emergency department or inpatient admission, or following an inappropriate regimen) within 30 days of hospital discharge.

Results: Results and conclusions of this project will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Identify the steps involved in implementing collaborative practice policies that allow inpatient pharmacists to modify and interchange select medications at discharge.

Describe the purpose of a pharmacist-completed warfarin discharge summary note.

Self Assessment Questions:

Which of the following is involved in implementing collaborative practice policies that allow inpatient pharmacists to modify and interchange select medications at discharge?

A Receive approval from the institution's Pharmacy, Nutrition and Th

B: Solicit input from decentral clinical pharmacists and prescribers

C: Collaborate with the institution's drug policy team

D: All of the above

Which of the following is the purpose of a pharmacist-completed warfari discharge summary note?

A A pharmacist-completed warfarin discharge summary note decrea

B A pharmacist-completed warfarin discharge summary note places

C A pharmacist-completed warfarin discharge summary note improv

D A pharmacist-completed warfarin discharge summary note increas

Q1 Answer: D Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-785 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF A CRITICAL CARE VERSUS NON-CRITICAL CARI INTRAVENOUS INSULIN INFUSION PROTOCOL IN A COMMUNITY HOSPITAL INTENSIVE CARE UNIT

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Background/Purpose: Clinicians often dispute the proper management of hyperglycemia in the critically ill patient. Some studies suggest a decreased risk of morbidity and mortality as a result of strict glycemic control, whereas others have revealed dissimilar results. As a result, physicians at Saint Joseph East (SJE) have been utilizing both a critical care intravenous (IV) insulin infusion protocol (target BG 111-140mg/dL) and a non-critical care IV insulin infusion protocol (target BG 140-180mg/dL) in the intensive care unit (ICU) depending on individual physician preference. The purpose of this study is to evaluate the comparative safety and efficacy these protocols.□□Methods: A multi-center retrospective electronic review of medical records was obtained from Saint Joseph Hospital and SJE in Lexington, KY. Patients will be included if they received an insulin drip per the DKA protocol from August 2011 to June 23, 2012 or the non-critical care or critical care IV insulin infusion protocol from September 27, 2010 to June 23, 2012. Patients will be excluded if they were <18 years old, diagnosed with HHS, or had customized insulin drip titration parameters. Patients will be stratified into the non-critical care protocol population or the critical care protocol population. Primary endpoints include the number of hypoglycemic episodes (BG <70mg/dL) experienced while on the insulin drip and the percent of time spent within blood glucose goal ranges. Secondary endpoints include the number of severe hypoglycemic episodes (BG <40mg/dL) experienced, the percent of time spent above blood glucose goal range, lengths of stay in ICU and hospital, average blood glucose and glucose variance, time to reach goal level (three consecutive readings within goal), average insulin units used per day, and mortality within 90 days of admission.□□Results/Conclusion: □Data collection is in process. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe current concepts in glycemic control of the intensive care unit patient

Explain how an institution can overcome some of the uncertainties surrounding blood glucose control in the ICU

Self Assessment Questions:

What are some proposed risks associated with hyperglycemia in an ICU patient?

A Increase in ICU mortality
B: Decrease in cognitive function
C: Increase in ICU costs
D: Increase in ICU sepsis

What recommendations does the ADA/AACE have in regards to the implementation of an ICU insulin protocol?

A All ICU insulin protocols should require the use of an insulin drip in
B Each institution should utilize an insulin infusion protocol with dem
C A blood glucose target of 110-140mg/dL appears to be the most e
D All of the above

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-857 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST MEDICATION ACCESS COUNSELING IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Purpose:□In recent years, the focus of healthcare has trended towards increasing patient satisfaction and quality of care. This is evident from the core measures that the Centers for Medicare and Medicaid and othe payers use to reimburse for healthcare services with specific diagnoses. The objective of this project is to assess whether pharmacist medication access counseling at a 356-bed community hospital has an effect on readmission rates in patients with chronic obstructive pulmonary disease (COPD) and to quantify the effect counseling has on patient reported satisfaction.□□Methods:□Prior to study commencement, the Institutional Review Board approved this protocol and implied consent was obtained for all subjects. All inpatients diagnosed with COPD are eligible for inclusion and are identified daily from a pharmacy report if they have active medication orders for tiotropium, iptratropium, or iptratropium/albuterol. Patients are excluded if they are cognitively impaired, clinically unstable, do not have access to mail, are incarcerated, pregnant, or age <18 years. The following data was collected: patient age, gender, admission length of stay (LOS), readmission within 30 days to this facility, and readmission LOS. Included patients then receive pharmacist counseling related to access to their COPD medications while admitted. A patient satisfaction questionnaire will be mailed to randomized patients approximately 10-14 days after discharge. □□Results/Conclusions:□Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Identify current trends in healthcare and COPD disease characteristics.

Describe commonly used treatment options for patients with COPD.

Self Assessment Questions:

Which of the following statements is true?

A COPD rarely causes morbidity or mortality
B: Patient satisfaction scores are an important measure for health-sy
C: COPD symptoms are usually related to temperature
D: Readmission after a COPD exacerbation is uncommon

Which of the following statements about pharmacist medication counseling in patients with COPD at Central Baptist Hospital is correct?

A Patients are generally not satisfied with their interaction during cou
B Pharmacists are not appropriately trained to provide this type of se
C Patients report high levels of satisfaction with counseling sessions
D Readmission rates decrease significantly as a result of this service

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-615 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF ALEMTUZUMAB VS. BASILIXIMAB INDUCTION IN LUNG TRANSPLANTATION

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Purpose: Despite improvements in immunosuppressant regimens, the incidence of acute cellular rejection (ACR) and chronic rejection (CR) continues to be a major problem in lung transplantation (LT). Repeated incidence of ACR can increase the risk for development of CR post lung transplant, with 36% ACR incidence within first year post transplant. 8, 10 The use of induction therapy has been shown to decrease the risk of early ACR. Prior studies assessing ACR have limitations such as varying immunosuppression protocols between transplant centers and ACR grading between pathologists. Indiana University Health lung transplant program recently changed the induction agent of choice to alemtuzumab in combination with low dose maintenance immunosupression (MI), from basiliximab in combination with standard dose MI, in August of 2011. The objective of this study is to compare the incidence of early ACR between these two groups within this first 6 months post-transplant. Methods: This was a retrospective cohort review of patients >18 years old who received a lung transplant between January 1, 2010 to present. Patients were excluded if they had prior lung transplantation. Patients were identified using the electronic medical record, and were divided into two groups based on induction therapy, basiliximab or alemtuzumab. The primary outcome was average biopsy score at 6 months. Secondary outcomes included the incidence of grade A2 or high rejection, infections, and comparison of laboratory data. Results: Data collection and analysis is currently ongoing. Final results and conclusions of these patients will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Explain the importance of preventing acute cellular rejection in patients who received lung transplantation.

Describe the possible advantages that alemtuzumab induction provides over basiliximab for lung transplantation.

Self Assessment Questions:

JW is a 30 YOM who received lung transplantation for end=stage COPD. JW has been treated for grade 2 rejections 5 times in the past 6 months. JWs history of ACR is concerning because of which of the

A JW is at an increased risk of developing end-stage COPD of the d
B: JW is at an increased risk of developing primary graft dysfunction
C: JW is at an increased risk of developing chronic rejection
D: JW is at a decreased risk of developing primary graft dysfunction

What is a potential benefit of using alemtuzumab as an induction agent?

A Requires a less aggressive maintenance immunosuppression regi
B Requires a more aggressive maintenance immunosuppression reg
C Decreases the risk of developing infection post transplant
D Increases the risk of developing infection post transplant

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-616 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF RISK OF CLOSTRIDIUM DIFFICILE INFECTION WITH GASTRIC ACID SUPPRESSIVE THERAPY IN TRAUMA PATIENTS

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Background: Many risk factors for C. difficile infection (CDI) have been identified with antimicrobial exposure being the most commonly cited. Proton pump inhibitors (PPIs) and histamine2 receptor antagonists (H2RAs) remain under scrutiny as risk factors for CDI. Due to controversial research on the association of gastric acid suppressive therapy (GAST) with CDI, trauma patients admitted to University of Louisville Hospital were evaluated to identify the risk between GAST and CDI. Methods: The study was conducted as a matched, retrospective case control study. Prior to commencement, the study was approved by the Institutional Review Board. The primary objective was to measure the associated risk of CDI with PPI and H2RA use. Secondary objectives included identifying CDI risk associated with injury severity and evaluating prescribing patterns of GAST. Patients 18 years or older and admitted to trauma services between January 2009 and June 2012 were included. Case patients had a positive C. difficile toxin and were matched to control patients without a positive toxin based upon admission year, age, gender, length of stay (LOS), and antibiotic exposure. Patients with a positive toxin < 72 hours into admission, a current CDI, or with LOS < 72 hours were excluded. Data analysis was conducted using McNemars test for matched pair data and univariate and multivariable conditional logistic regression analysis. Results: Of 63 case patients identified, 50.8% were prescribed PPIs, 38.4% H2RAs, and 3.2% were not prescribed GAST. Approximately 8% of patients were exposed to both a PPI and H2RA. The average injury severity score was 25.6 with 30.2% of patients undergoing exploratory laparotomy prior to diagnosis of CDI. Patients were exposed to an average of 3.17 antibiotics for a mean duration of 9.46 days prior to CDI diagnosis. Conclusions: Pending completion of statistical analysis.

Learning Objectives:

Recognize signs, symptoms, and complications of Clostridium difficile infection

Identify proposed mechanisms of gastric acid suppression therapy increasing the risk for Clostridium difficile infection

Self Assessment Questions:

Clostridium difficile infections have been associated with the following complication:

A Renal impairment
B: Pulmonary edema
C: Hyperglycemia
D: Pericarditis

Which one of the following mechanisms has been proposed to explain the association of gastric acid suppressive therapy with Clostridium difficile infection?

A Decreased gastric pH promotes proliferation of C. difficile in the gu
B Impairment of leukocytes
C Suppression of bile salts leads to germination of C. difficile spores
D Probiotic properties

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-617 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EXPANSION OF A GENERIC MEDICATION PILOT PROJECT WITHIN AN INTEGRATED DELIVERY NETWORK

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Background□□Pharmacy services have been shown to have a positive impact on prescribing trends and cost savings by identifying ways to optimize medication use. A recent pilot project conducted at Norton Healthcare (NHC) showed that a generic medication pharmacy service, designed as a two-part intervention, significantly improved the generic dispensing ratio (GDR). The intervention included provision of educational resources to physicians and distribution of select generic medication samples to the physician practice site. Expansion of this pharmacy service provides an opportunity for optimizing medication use and generating cost savings without sacrificing the quality of patient care. Being a self-insured entity, NHC has added incentive to expand the generic medication pharmacy service to avoid unnecessary medication costs. Based on the model of the pilot project, this investigation will seek to prove that the model is reproducible and sustainable across NHC-owned physician practice sites.
□□

Methods□□All NHC-owned physician practice sites were targeted for inclusion in this study. This study outlines the decision process for how the generic medication pharmacy service was expanded, including the number and selection of practice sites, the number and type of generic alternatives provided, as well as other educational and operational aspects. Descriptive analysis will portray the sequential steps and details necessary for successful expansion of the generic medication pharmacy service. □□Results□□Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference in April 2013.

Learning Objectives:

Describe the process for expanding a generic medication pharmacy service within an integrated health system network.

List the critical components for consideration when optimizing expansion of pharmacy services.

Self Assessment Questions:

Which of the following steps should be included in the process for expanding a generic medication pharmacy service within an integrated delivery network?

A Obtain stakeholder approval
B: Ensure operational efficiency
C: Justify the cost of providing the service
D: All of the above

All of the following would promote the successful expansion of pharmacy services except:

A Pilot project
B Need for manpower resources
C Contractual and business agreements
D Strategic plan

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-786 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INVESTIGATION OF VORICONAZOLE THERAPEUTIC DRUG MONITORING

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Purpose:□Invasive fungal infections (IFIs) including those caused by Aspergillus species, are associated with significant mortality in immunocompromised patients. Optimizing antifungal therapy is vital for successful treatment. Voriconazole is a second generation triazole antifungal with broad spectrum activity, including enhanced activity against Aspergillus species. Voriconazole has wide variability in serum concentrations as a result of genetic polymorphisms in CYP2C19 metabolism, saturable pharmacokinetics, interacting medications, pre-existing liver disease, and age. Variations in serum concentrations have been shown to be associated with reduced efficacy and increased adverse events. Therefore, monitoring voriconazole serum concentrations may be an essential step in enhancing efficacy and reducing adverse events. The objective of this study is to determine the association between voriconazole serum concentrations with safety and efficacy of treatment. □□Methods: □This is a single-center retrospective chart review including patients at least 18 years of age who received voriconazole from July 1, 2011 through July 30, 2012 for treatment or prophylaxis of fungal infections. Patients that were pregnant during this aforementioned timeframe will be excluded from the study. General demographic information, weight, indication for antifungal therapy, voriconazole dose, dosage form, days of voriconazole therapy, time to voriconazole level, voriconazole level, reason for level, response to level toxicities related to voriconazole, outcome of treatment, interacting medications, underlying liver dysfunction, co-morbid conditions will be collected. The primary endpoints are treatment outcomes measured by clinical success, failure, or death and adverse events associated with voriconazole serum concentrations. Secondary outcomes include reason for serum concentration (lack of response, toxicity), clinical decision based on serum concentration (change in dose, discontinuation), percent of serum concentrations drawn at steady state, and appropriateness of serum concentration in relation to dose. □□Results:
□

Data collection and evaluation are currently being conducted; final results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the factors responsible for the variability in voriconazole serum concentrations

Discuss the potential benefits of monitoring voriconazole serum concentrations

Self Assessment Questions:

Which of the following is NOT associated with the variability in voriconazole serum concentrations?

A CYP2C19 polymorphisms
B: Acute renal dysfunction
C: Saturable pharmacokinetics
D: Age

Which of the following adverse events may be associated with elevated voriconazole serum concentrations?

A Neurological toxicity
B Rash
C Phototoxicity
D GI upset

Q1 Answer: B Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-620 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFICACY OF DUAL ATYPICAL ANTIPSYCHOTIC THERAPY IN VETERANS WITH SCHIZOPHRENIA

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Purpose: Atypical antipsychotic (AAP) monotherapy is the standard of care for schizophrenics, but these agents may not provide early & robus responses in patients with severe, disabling, or treatment-resistant symptoms. Clozapine has been shown to be effective for treatment resistance but requires frequent monitoring for side-effects & patient/provider registry. In clinical practice, this has led to the use of tw or more AAPs concurrently in a single patient. However because of the cost and risk for side effects, it is important to assess if AAP polypharmacy leads to a reduction in medical costs or better outcomes; therefore, the primary objective of this study is to determine if combination AAP therapy reduces hospital admission rates/ER visits, time to readmission for psychotic episodes, or length of stay. The secondary objective is to determine if patients have failed or are offered a trial of Clozapine prior to combination AAP therapy. Methods: This is a retrospective chart review of adult veterans receiving mental health services at the John D. Dingell VA medical center with schizophrenia or related disorders who have been treated with a combination of two AAPs for at least 1 year. The following information will be collected: patient characteristics, history of clozapine use, and antipsychotic medication and dosage used -both 1 year before and after atypical combination therapy. Objective measures of schizophrenia relapse/symptoms to be assessed are hospitalization admissions for mental illness and the length of each stay in days, number of ER visits for mental illness, and time between hospital admissions/ER visits (in days) will be recorded pr and post AAP combination therapy. Each patient will serve as their own control so power analysis not performed. Categorical data will be summarized using descriptive statistics. We will compare our defined objective measures utilizing a paired-T test and differences will be considered significant when $P<0.05$.

Learning Objectives:

Identify an appropriate medication regimen for treatment-resistant schizophrenia.

Discuss the barriers amongst providers that hinder the wide-spread utilization of clozapine.

Self Assessment Questions:

Which antipsychotic medication is the only monotherapy agent that has proven efficacy in refractory schizophrenics?

A Clozapine
B: Haloperidol
C: Loxapine
D: Olanzapine

Which potential consequence is most likely to occur from the over-utilization of AAP polypharmacy?

A Increased risk for seizures
B Increased risk for Alzheimer's
C Increased risk for pancreatitis
D Increased risk for metabolic syndrome

Q1 Answer: A Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-621 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PHARMACIST INVOLVEMENT IN MEDICATION MANAGEMENT IN AN OUTPATIENT HEART FAILURE CLINIC

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Purpose: According to the United States Department of Health and Human services, in 2009, approximately 25% of patients initially hospitalized for heart failure were readmitted for any cause within 30 days. With the enactment of the Patient Protection and Affordable Care Act, hospitals are now being penalized for excess heart failure readmissions. In an effort to streamline the number of patients who are being readmitted and maximize reimbursement rates, Provena Saint Joseph Medical Center (PSJMC) established a heart failure clinic to care for and treat these patients in an outpatient setting. The purpose of this study is to evaluate the outcomes of a community-based heart failure clinic on 30-day hospital readmission rates. Methods: The PSJMC outpatient heart failure clinic opened on November 15, 2012, taking patients on a referral basis. A retrospective review was completed using Midas software to trend the pattern of heart failure admissions during the third quarter of 2012 at PSJMC. This baseline data will be used to compare changes in readmission rates following the opening of the hear failure clinic through March 2013. The patients who visit the clinic will be followed to determine if they have a reduction in the amount of heart failure readmissions to PSJMC. This data will also be used to calculate a cost savings for the hospital based on the reduced number of patients being readmitted for their heart failure treatment. The role of the pharmacist in the clinic will include performing medication reconciliation, medication management, and patient education. Additionally, a drug utilization and cost differentiation will be conducted to compare differences in treatment for the nurse practitioner and pharmacist in the clinic verses the nurse practitioner alone. Results/Conclusions: Data collection and analysis are currently in progress. Results and conclusions will be presented at the Great Lakes Residency Conference.

Learning Objectives:

Describe the rationale for initiating a community hospital outpatient hear failure clinic.

List examples of contributions a pharmacist can provide to the heart failure clinic.

Self Assessment Questions:

Recent data shows that approximately _____ percent of patients initially hospitalized for heart failure are readmitted within 30 days.

A 5
B: 15
C: 25
D: 50

If a patient was admitted with a primary diagnosis of heart failure and within 30 days is readmitted for _____, the hospital will not be reimbursed

A Pneumonia
B Heart failure
C Broken leg
D All of the above

Q1 Answer: C Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-618 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ASSOCIATION BETWEEN LIVER DISEASE AND QTC PROLONGATION FOLLOWING ANTIPSYCHOTIC TREATMENT IN CRITICALLY ILL PATIENTS

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Delirium in critically ill patients is associated with increased mortality, prolonged hospitalization, and post-discharge institutionalization. To reduce the likelihood of such outcomes, antipsychotic agents are used to treat delirium in this population. However, these agents are associated with substantial risks, including QTc prolongation that can lead to the fatal arrhythmia, torsade de pointes. Because these agents are hepatically metabolized, patients with liver disease may be at increased risk. This study is evaluating the association between liver disease and QTc prolongation in critically ill patients treated with antipsychotic agents, specifically quetiapine with or without concurrent haloperidol.□□This single-center, retrospective, cohort study has been approved by the University of Michigan Institutional Review Board. Patients in the medical and surgical intensive-care units (ICU) are included in the study. Inclusion criteria are receipt of at least 1 dose of quetiapine and availability of electrocardiograms (EKGs) before and after administration of quetiapine with or without haloperidol. Patients taking antipsychotic therapy at the time of admission to the ICU and those who received antipsychotic agents other than quetiapine or haloperidol during their hospitalization are excluded. The following data are being collected: age, sex, quetiapine and haloperidol doses received, concurrent medication history and disease states, electrolyte panels, baseline and follow up QTc intervals, timing of EKGs relative to dose administration, and Child-Pugh Score parameters. The change in QTc prolongation from baseline is being measured and compared between patients with and without liver disease, as is the incidence of QTc lengths greater than 500 milliseconds. Sub-analyses will be conducted in patients with acute versus chronic liver disease and in patients stratified by Child-Pugh Score, concurrent QTc prolonging medications, and number and strength of antipsychotic agent doses received. Data collection and analysis are ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Discuss the adverse effects associated with the use of antipsychotic agents.

Describe the benefits of antispychotic therapy in critically ill patients with delirium.

Self Assessment Questions:

Which of the following is true?

A Higher rates of extrapyramidal symptoms are typically associated
B: Higher rates of metabolic disturbances are typically associated wit
C: QT prolongation has been associated with antipsychotic agents fro
D: None of the above are true.

Based on the results of the Devlin study, the use of quetiapine for treatment of delirum in critically ill patients was associated with:

A Reduced length of hospital stay.
B Reduced length of mechanical ventilation.
C Shortened time to resolution of delirium.
D Decreased mortality.

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-619 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

USE OF NALOXONE TRIGGERS TO GUIDE THE DEVELOPMENT OF IMPROVED OPIOID PRACTICES

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Purpose:□Opioids are commonly implicated with adverse drug events in the hospital setting. The most serious of these is respiratory depression (commonly preceded by sedation). In August 2012, the Joint Commission issued a sentinel event alert addressing safe opioid practices. The alert suggested that hospitals take multiple actions, including use of patient-specific monitoring plans, second level review by pain specialists, tracking of opioid-related adverse drug events (ORADEs), and utilization of standardized tools for risk factor screening. Additionally, many publications in patient and medication safety support the use of specific triggers to guide the improvement of health system opioid practices, including the use of a naloxone trigger tool to assist with the detection of adverse events. The objectives of this two phase study are to identify ORADEs through the use of a naloxone trigger tool and to improve the use of opioids in a specific group of patients at high risk. □□Methods: □In the first phase, a naloxone trigger tool in the form of Pyxis vend reports was utilized to retrospectively examine all hospitalized patients who received naloxone over a two month timeframe. Data collected includes patient age, total naloxone dose administered, narcotics prescribed prior to naloxone administration, ORADE(s) prompting naloxone administration, location within the hospital, presence of ORADE risk factors, assessment/monitoring used, number of providers prescribing pain medications, and mortality associated with opioid use. Patients who presented to the emergency department requiring narcotic reversal because of opioid overdose were excluded. □□In the second phase, collected patient data directed further analysis of chronic pain patients with ORADE risk factors. A prospective pilot study will assess the impact of pharmacist interventions on pain management in this population.□□Results/Conclusions: □To be presented at the 2013 Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Recall various patient risk factors for opioid-related oversedation and respiratory depression.

Select appropriate pharmacist intervention strategies for patients at high risk for opioid-related adverse drug events (ORADE's).

Self Assessment Questions:

Which of the following may increase a patient's risk for opioid-related respiratory depression?

A Type 2 diabetes mellitus
B: Chronic gout
C: Chronic obstructive pulmonary disease (COPD)
D: Major depressive disorder

Which of the following would be an appropriate pharmacist intervention to help reduce the risk of opioid-related adverse drug events (ORADE's)

A Assessment of pain using just one type of pain scale.
B Minimizing the number of as needed opioids ordered for breakthro
C Advocating for the use of long-acting opioids with an opioid contin
D Using opioids to meet a planned discharge date.

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-622 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF PHARMACIST SCREENING ON VACCINATION RATES FOR PCV13 AND PPSV23 IN SOLID ORGAN TRANSPLANT CLINIC PATIENTS

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Purpose: Streptococcus pneumoniae causes an estimated 39,750 cases of invasive disease and 4,000 deaths annually in the United States. Studies report significantly higher rates of invasive pneumococcal disease (IPD) in organ transplant recipients. Historically for use in children, in December 2011 the 13-valent pneumococcal conjugate vaccine (PCV13) was approved for use in adults 19 and older under the Food and Drug Administrations accelerated approval pathway based on immunogenicity studies showing increased efficacy with PCV13. In June 2012, the Centers for Disease Control (CDC) Advisory Committee on Immunization (ACIP) recommended routine use of PCV1 for adults aged 19 or older with immunocompromising conditions, including solid organ transplant recipients, in addition to the 23-valent pneumococcal polysaccharide vaccine (PPSV23). Studies have shown the ability of pharmacists to improve vaccination rates, particularly in high-risk patients such as solid organ transplant recipients. The purpose of this study is to determine if pharmacist screening increases pneumococcal vaccination rates in solid organ transplant clinic patients when compared to a historic cohort. Methods: This prospective cohort analysis will be conducted in heart, lung, liver, and kidney transplant patients from February-March 2013. Subjects will be excluded if they are under 18 years old, present for pre-transplant, lab, nutrition, or donor appointments. Pharmacists will prospectively screen the first fifty eligible, unique patients from each clinic for study inclusion. Data collection will include previous reaction to a pneumococcal vaccination, allergies to vaccine components, demographics, type and date of transplant, immunosuppressive regimen, history of pneumococcal vaccination, vaccinations administered in clinic, and reasons for not vaccinating in clinic. The primary endpoint is to compare the vaccination rates after pharmacist screening to the historic cohort of solid organ transplant recipients. Results: to be presented Conclusions: to be presented

Learning Objectives:

Recognize appropriate indications for PCV13 and PPSV23 vaccination i immunocompromised patients, including solid organ transplant recipients.

Discuss pharmacists potential impact on identifying and eliminating barriers to immunization and promoting vaccination advocacy.

Self Assessment Questions:

A solid organ transplant patient with no prior pneumococcal vaccinations received a Pneumovax 23 vaccine 8 weeks ago, is another pneumococcal vaccine indicated at this clinic visit?

A Yes, give PPSV23 at this visit

B: No, give PCV13 in 4 weeks

C: Yes, give PCV13 at this visit

D: No, give PPSV23 in 5 years

Pharmacists have been showing to increase vaccination rates through which of the following activities:

A Vaccinating

B Screening

C Educating

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-623 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT OF A NEW CENTRAL PHARMACY OPERATIONS WORKLOAD REPORTING AND PRODUCTIVITY MONITORING SYSTEM

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Purpose: The purpose of this investigation was to develop a new central operations workload reporting and productivity monitoring system in order to improve efficiency and performance. The objectives of this study were to determine key metrics that drive workload and develop time standards to determine overall labor requirements. This new system captured changes in central pharmacy workflows, including the implementation of automation. Methods: A team of stakeholders was organized to assess current productivity metrics associated with central pharmacy workload. New metrics were identified surrounding previously unreported workflows and several time standards were targeted for revision. Pharmacist and technician workflows were observed and mapped to determine the start and stop times associated with each activity. Pilot time studies via direct observation and self-reporting were performed to determine the number of observations required for a 90% confidence interval. All necessary observations were collected. Potential data sources were analyzed to identify volume metrics associated with each new workflow. The volume metrics and time standards were incorporated into the central pharmacy workload database. A comparison of workload before and after implementation of the new time standards was completed. A dashboard was created to facilitate internal benchmarking and communicate performance information captured by the productivity monitoring system. Results/Conclusions: Conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Describe methods for identifying key metrics and associated time standards for an inpatient central pharmacy productivity monitoring system.

Describe the benefits of monitoring pharmacy workload through internal benchmarking.

Self Assessment Questions:

Which type of time study provides the most accurate time estimate for high volume production activities, such as those seen in a central inpatient pharmacy?

A Direct observation

B: Modified Delphi process

C: Work sampling

D: Self-reporting

Which of the following is a perceived benefit of utilizing an internal benchmarking system to monitor workload?

A Bragging rights over other departments

B Ability to compare drug expense with other institutions

C Proper allocation of human and capital resources

D Additional commitment of resources to maintain the monitoring sy

Q1 Answer: A Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-787 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

RETROSPECTIVE REVIEW OF DYSLIPIDEMIA OUTCOMES IN CLINICAL VIDEO TELEHEALTH

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Purpose: Retrospectively evaluated dyslipidemia outcomes in patients managed through clinical video telehealth (CVT) at the Dayton Veterans Affairs Medical Center and its Community Based Outpatient Clinics (CBOCs). CVT is an alternative method of delivering healthcare to patients in rural areas.□□Methods: Patients were enrolled in CVT clinic, located at a CBOC, and gave verbal consent to participate in CVT. Data was collected for patients seen at least once via CVT within 8/1/2011 - 8/31/2012. Cholesterol goals were determined from Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III) guidelines. Reasons for exclusion included unwillingness to participate in management via CVT. The primary endpoint was to determine the percent change in low-density lipoprotein (LDL). Secondary outcomes included percent changes in high-density lipoprotein (HDL) and triglycerides. All percent changes were evaluated using a paired t-test with Bonferroni adjustment. Data was also collected determining which patients had an LDL >100 and LDL <100 before and after data collection which was evaluated using a chi-squared test. □□

Results: There were a total of 72 patients enrolled in this study. The primary outcome showed 4.25% decrease in LDL from the beginning of enrollment to the end of data collection and reached statistical significance (p=0.01). Triglycerides showed a 4.9% decrease (p=0.062) and HDL a 3.7% increase (p=0.087) however these findings were not statistically significant. Before enrolling in CVT clinic, 24 patients (34%) had an LDL reading of <100. Upon the end of data collection 39 patients (56%) had an LDL reading of <100. This finding was found to be statistically significant (p=0.001).□□Conclusions: Based on retrospective findings, managing dyslipidemia via CVT is an effective way of lowering cholesterol, particularly LDL cholesterol readings.

Learning Objectives:

Define advantages to clinical video telehealth and its potential role in the healthcare system.

Discuss the impact of clinical video teleheath on patients' cholesterol based on retrospective data collected.

Self Assessment Questions:

The potential advantages of clinical video telehealth include which of the following?

A Improved patient satisfaction

B: Decreased travel costs

C: Benefit for patients with limited mobility

D: All of the above

Based on retrospective data gathered, which of the following benefits were shown to be statistically significant?

A Decrease of LDL

B Decrease of triglycerides

C Increase in HDL

D Decrease in blood pressure

Q1 Answer: D Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-624 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

PUBLICATION RATES AND CHARACTERISTICS OF ABSTRACTS PRESENTED AT THE GREAT LAKES PHARMACY RESIDENCY CONFERENCE (GLPRC)

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Background:□Research is important to the practice of pharmacy in many ways. A major project, either research or non-research, is mandated as part of ASHP accreditation. □McKelvey, et al. published an article comparing project publication rates from 1981, 1991 and 2001 at the Southeastern Residency Conference. They found the overall publication rate to be 15.8%. Olson, et al. published a similar study reporting publication rates from the Western States Conference in 1995, 2000 and 2005. They found an overall publication rate of 6.3%.□□Purpose:□Determine the publication rate of abstracts presented at GLPRC and the utility of a pharmacy residency research network.□□Methods:□The primary aims of this study are to describe the publication rate of projects presented at GLPRC in the years 2008, 2009 and 2010, assess similarities between projects presented, and initiate establishment of a pharmacy residency research network.□To assess project publication, PubMed and International Pharmaceutical Abstracts will be searched. If a publication is not identified through the above process, an attempt will be made to determine if the project was presented at a separate conference. The percent of abstracts published from each year as well as an overall publication rate will be calculated. □

Projects will be organized by interest, study methodology, and keywords. Those abstracts that match the previous parameters will be further evaluated to assess similarity of studies. The percentage of projects with a similar project will be calculated.□Based on the results of Specific Aims 1 and 2, the utility of a pharmacy residency research network would be evaluated. The network could serve as a prospective and retrospective resource for residents to collaborate to make their project more publishable. □□Results:□Results and conclusions to be presented at GLPRC.

Learning Objectives:

Identify barriers to publication.

Recognize trends in residency research publication rates.

Self Assessment Questions:

Which of the following is a barrier to publication?

A Time allotment

B: Positive work environment

C: Lack of collaboration

D: Formal training in research

What percentage of residency projects get published?

A Less than 20%

B 20-30%

C 30-40%

D Greater than 40%

Q1 Answer: C Q2 Answer: A

ACPE Universal Activity Number 0121-9999-13-788 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

TYPES OF MEDICATIONS UTILIZED BY PATIENTS IN A NETWORK OF FAMILY MEDICINE CLINICS

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Purpose: Polypharmacy (PP) is the use of multiple medications by a patient, when more drugs are prescribed than is clinically warranted, or when all prescribed medications are clinically indicated, but there are too many pills to take (pill burden). The most common results of polypharmacy are increased adverse drug reactions, drug-drug interactions and higher costs. Polypharmacy is most common in the elderly and patients with multiple medical conditions, but is also an issue among the general population. This study will provide characteristics of patient who are at higher risk for polypharmacy and associated drug-related problems based on age, sex, race, ethnicity, marital status, and ICD-9 diagnosis. With this knowledge, primary care providers may become more aware of these patients and spend more time focusing on appropriateness of medication use in the primary care setting.□□Methods: The study received exemption from the University o Wisconsin-Madison Health Sciences Institutional Review Board. The study sample consisted of patient demographic and medical data drawn from the Clinical Data Warehouse (CDW), a database of electronic medical records from 22 primary care clinics across Wisconsin. The CDW has been in use since 2005 and provides comprehensive information on patients seen at these clinics, including medication use, medical diagnoses, demographic information, and biometric data. A retrospective query, evaluating patients seen in primary care clinics at least once during a specified time period was performed. The de-identified medication data and refill history was correlated with patient age, sex, race, ethnicity, marital status, and ICD9 diagnosis. Different patient demographics and co-morbidities will be analyzed for associatior with medication use using univariate and multivariate analyses.□□Results/Conclusions: Data collection and analysis are currently being conducted; final results and conclusions will be presented at the 2013 Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Define polypharmacy.

Indicate characteristic themes that define patients with high medication use.

Self Assessment Questions:

Which of the following statements best defines polypharmacy?

A Polypharmacy is when less drugs are prescribed than warranted.

B: Polypharmacy is the use of multiple medications by a patient.

C: All of the above.

D: None of the above.

Which of the following is a characteristic theme that defines patient with high medication use?

A Amount of refills

B Number of provider visits per year

C Race/ethnicity

D All of the above

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-789 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

INTEGRATION OF THE NANOSPHERE VERIGENE TEST INTO AN ANTIMICROBIAL STEWARDSHIP PROGRAM

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Purpose: The excessive prescribing of broad-spectrum antibiotics exists as a major problem in the medical community. This overuse has resulted in the emergence of multi-drug resistant (MDR) bacteria strains. Rapid and accurate detection of bacterial species and resistance factors is essential for tailoring antimicrobial therapy. The purpose of this study will be to evaluate the effectiveness of implementing a rapid Gram-positive bacteria and resistance factor test into an antimicrobial stewardship program.□□Methods: This will be a prospective study. All patients under 18 years of age will be excluded. The following data will be collected: patient age, gender, weight, complete blood count, pertinent physical exam findings, culture and sensitivity reports, antimicrobial therapy, renal and hepatic function tests time to appropriate antibiotic regimen, and Nanosphere Verigene test results. Data will be collected, recorded, and analyzed confidentially and without the use of patient identifiers. The laboratory will automatically run the Nanosphere Verigene test for inpatients with a gram-positive blood culture isolate and will contact pharmacy with the test results. The pharmacist will evaluate the patients profiles to ensure they are on appropriate treatment. If a test comes back with a positive result for the mecA gene and the patient is not on vancomycin, the pharmacist will order a one time dose of vancomycin. The pharmacist will also notify the physician and nurse of the test results and vancomycin therapy. If a result comes back with a positive result for the vanA and/or vanB genes, the pharmacist will contact the physician. The pharmacist will consult with the physician in all cases to determine further treatment. A pharmacist will analyze this data to determine if the Nanosphere Verigene test reduced the time to appropriate antibiotic treatment. □□

Results: Results pending.□□Conclusions: Will be made after results are analyzed.

Learning Objectives:

Name the different resistance genes the Nanosphere Verigene test can detect for gram-positive bacteria and what type of resistance they confer

Identify the advantages of utilizing a rapid detection test for antimicrobia therapy

Self Assessment Questions:

Which of the following genes correlates to MRSA?

A vanA

B: mecA

C: vanB

D: ermB

Which of the following is an advantage of utilizing a rapid detection test for antimicrobial therapy?

A Increased cost to both the patient and hospital

B Long turn around time for test results

C Unnecessary use of inappropriate antimicrobial therapy

D Reduced time to appropriate antimicrobial therapy

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-625 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EFFECT OF PYRIDOXINE ON LEVETIRACETAM-ASSOCIATED BEHAVIORAL CHANGES

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Purpose Levetiracetam is a rapidly titratable antiepileptic medication that has minimal drug interactions and side-effects. Behavioral changes are more commonly reported in children receiving levetiracetam compared to adults, and have been severe enough to warrant discontinuation of therapy. While case reports have described mitigation of levetiracetam-associated behavioral issues with pyridoxine supplementation, well-designed studies demonstrating this benefit are lacking. The primary objective of this study is to evaluate the effect of pyridoxine on levetiracetam-associated behavioral changes in pediatric patients with epilepsy. Methods This is a retrospective chart review of pediatric patients who developed or had worsening behavioral issues while on levetiracetam therapy with subsequent initiation of pyridoxine. The study will include patients between 2 and 18 years of age seen in the New Onset Seizure clinic at Cincinnati Childrens Hospital Medical Center from December 1, 2010 through December 31, 2013 who received levetiracetam and pyridoxine. Patients will be excluded if pyridoxine was initiated prior to or concomitantly with levetiracetam therapy or levetiracetam was discontinued prior to initiation of pyridoxine Patients will be evaluated at the initiation of pyridoxine and three and six months following initiation. The primary outcome is to compare Pediatric Epilepsy Side Effect Questionnaire (PESQ) behavioral subscale scores at baseline, three months, and six months after pyridoxine initiation. Secondary outcomes include evaluating clinical documentation of behavioral issues, identifying a dosing range of pyridoxine, evaluating the safety of pyridoxine, and identifying confounders. Descriptive statistics will be used to characterize patient demographics and baseline variables. Results A total of 27 patients with an average age of 10.4 years (range: 4.1-19.4) were initiated on pyridoxine following the development of behavioral side-effects associated with levetiracetam. Complete results and conclusion will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify characteristics of levetiracetam that make it a desirable antiepileptic option

Describe the behavioral side effects associated with levetiracetam that are observed in pediatric patients

Self Assessment Questions:

Levetiracetam is a desirable antiepileptic option because:

A It is metabolized through the 3A4 system

B: It has no side effects

C: It has minimal drug interactions

D: It achieves better seizure control than other antiepileptics

Behavioral side-effects associated with levetiracetam include:

A Word-finding issues

B Aggression

C Schizophrenia

D Disorganized behavior

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-626 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

COMPARISON OF INFECTION RATES BETWEEN TWO DIFFERENT ANTIBIOTIC PROPHYLAXIS REGIMENS AMONG VENTRICULAR ASSIST DEVICE RECIPIENTS AT A SINGLE-CENTER HOSPITAL

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Background: Ventricular assist devices (VADs) are a medical advancement that has prolonged the lives of many patients with cardiac complications. Prophylactic antibiotic regimens have been utilized in attempts to reduce the rates of post-operative infections. We retrospectively reviewed and compared the clinical outcomes between a multi-drug antibiotic prophylaxis regimen and a two-drug antimicrobial regimen. Methods: Of the 117 patients identified between May 2008 and June 2012, 87 patients were reviewed. Patients were grouped into two prophylaxis treatment cohorts: recipients of multi-drug regimen (n=31) and recipients of a two-drug regimen (n=56). Pre-determined infection-related parameters were collected and compared. Statistical analyses utilized include t-test for continuous variables and Chi-square analysis for categorical variables. Results: There was a greater incidence of overall infections among the two-drug regimen (n=71) compared to the multi-drug regimen (n=59). However, overall infection rates between the two cohort groups remained statistically indifferent (46.4 % vs. 38.7%, p = 0.484). There was no statistical difference found between the groups in regards to the following infections: blood stream, respiratory tract, cardiovascular, skin and soft tissue, and surgical site. A statistical difference was observed for urinary tract (UTI) (p = 0.029) and gastrointestinal infections (p = 0.014). Sub-analysis of UTIs showed that multi-drug regimen patients had a much lower UTI rate (29.6% vs. 41%). In addition, among all UTI patients, the mean days with a foley catheter retained were longer in duration (11.7 days vs. 8.9 days). Conclusion: Despite a higher rate of infection, the risks and benefits of a higher infection rate resulting from using a two-drug may ultimately outweigh the inability to treat infections caused by resistant organisms resulting from the use of a three-to-four drug regimen. We aim to conduct further studies to identify practices among VAD recipients to prevent complications associated with infections.

Learning Objectives:

Identify appropriate antimicrobial agents for ventricular assist device surgical prophylaxis

Recognize the infection risks associated with the use of urinary foley catheters

Self Assessment Questions:

According to the 2013 Infectious Diseases Society of America clinical practice guidelines for surgical antimicrobial prophylaxis, which antimicrobial agent is recommended for ventricular assist device

A Piperacillin-Tazobactam

B: Ciprofloxacin

C: Cefazolin

D: Meropenem

For patients with indwelling urinary catheters, the risk of bacteruria increases each day by

A 1%

B 2%

C 5%

D 15%

Q1 Answer: C Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-627 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

ANALYSIS OF PHARMACIST IMPACT ON MEDICATION ADHERENCE RATES AT A GROCERY CHAIN COMMUNITY PHARMACY

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Objectives: (1) To evaluate the change in medication adherence after direct pharmacist intervention, (2)To identify the factors contributing to abandoned prescriptions, and (3) To determine patient perceptions of the pharmacists intervention.□ □Methods: A total of 478 eligible patients, whose medical care was provided by a local physician hospital organization (PHO) and who were prescribed medications for the treatment of dyslipidemia, hypertension, and/or diabetes, were identified by a computerized pharmacy database. These patients, who were also current customers of the local community pharmacy, were flagged in the computerized prescription processing system for future pharmacist intervention. Prescription claims data were assessed over the previous twelve months to obtain baseline medication adherence rates. Once a new or refilled prescription was identified as abandoned (filled but not picked up within 12 days), the pharmacist intervened by contacting the patient directly by telephone and offering face-to-face consultation. During consultation, the pharmacist attempted to identify and document the barriers leading to the abandoned prescription. The collected information was communicated back to care managers at the PHO in order to help solve specific patient concerns. In addition, patients were asked to complete a short satisfaction survey after pharmacist consultation to gauge patient perceptions of the pharmacists intervention. Follow-up telephone consultation was also provided by the pharmacist on a monthly basis for the next six months. Six months after the pharmacist intervention began, pharmacy claims data were re-assessed to measure the change in medication adherence rates from baseline.□□Results: It is anticipated that the interventions made by the pharmacist will lead to fewer abandoned prescriptions and an increase in medication adherence rates. □□Conclusion: Research is currently in progress.

Learning Objectives:

Describe how medication possession ratio (MPR) applies to evaluating medication adherence

Discuss the role of direct pharmacist consultation for reducing the number of abandoned prescriptions and improving medication adherenc

Self Assessment Questions:

Which of the following best defines the term medication possession ratio (MPR)?

A The proportion of time the patient was covered by a medication su
B: The number of prescription refills a patient received in one year.
C: The number of days supply of medication divided by the number o
D: The number of days supply of medication divided by the total num

According to the presentation today, which of the following is most accurate regarding direct pharmacist consultation?

A Patients with complex medication regimens are unlikely to benefit
B Direct pharmacist consultation may offer reductions in abandoned
C Only patients with new medications would benefit from direct phar
D Community pharmacists do not have an impact on reducing the nu

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-628 - L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A DELIRIUM MANAGEMENT PROGRAM

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Background:□Delirium is a commonly under-diagnosed psychiatric disorder affecting patients in intensive care units (ICU) leading to poor outcomes, including increased mortality, length of ICU and hospital stays, dementia, and institutionalization. The Confusion Assessment Method for intensive care units (CAM-ICU) was developed to identify delirium in ICU patients in order to provide timely delirium treatment and improve these outcomes. ProMedica Toledo Hospital recently approved this validated tool for assessment of delirium in ICU patients.□□Purpose: □The purpose of this study is to evaluate non-pharmacologic and pharmacologic management outcomes in CAM-ICU positive patients. Secondary outcomes to be assessed are the duration of delirium, length of ICU stay, length of hospital stay, length of mechanical ventilation, mortality, and functional status at time of discharge.□□Methods:□This prospective study will include patients 18 years and older who have been admitted to an adult intensive care units at ProMedica Toledo Hospital for at least 24 hours between December 2012 and March 2013. This study has been approved by the ProMedica Institutional Review Board and will be conducted by a PGY-1 pharmacy resident with the support of the clinical pharmacy staff. Data collected includes baseline demographics and laboratory tests, CAM-ICU score, use of common agents associated with delirium, interventions made in CAM-ICU positive patients and their effects, any complications or adverse drug events, length of ICU and hospital stay, and the clinical disposition of the patient at discharge. Delirium and CAM-ICU educatior was provided to adult ICU nurses and critical care intensivists prior to the study. Nurses assessed appropriate patients using the CAM-ICU at leas once per shift and upon any change in mental status. Delirium management strategies were analyzed to develop a standardized multidisciplinary treatment approach. □□Results:□Results and conclusions to be presented at Great Lakes Pharmacy Resident Conference

Learning Objectives:

Define delirium and the features evaluated using the Confusion Assessment Method for Intensive Care Units

Describe non-pharmacologic and pharmacologic techniques that can be utilized to prevent and/or treat delirious patients

Self Assessment Questions:

Which features are required to identify a patient as delirious according to the CAM-ICU? (Feature 1: Acute change or fluctuating course of mental status, Feature 2: Inattention, Feature 3: Altered lev

A Features 2, 3, 4
B: Features 1, 2, 4
C: Features 1, 3, 4
D: Features 1, 2

Patient case: 32 year old male with no significant past medical or social history was admitted to the medical ICU with massive bilateral pulmonary embolisms and developed delirium. Which of the follo

A Midazolam
B Rivastigmine
C Dexmedetomidine
D Haloperidol

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-629 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPMENT AND IMPLEMENTATION OF A MULTI-FACETED PEDIATRIC MEDICATION SAFETY STRATEGY

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Purpose: Pediatric patients are uniquely vulnerable to medication errors due to pharmacodynamic and pharmacokinetic differences compared to adults. In addition, other factors that place pediatric patients at risk include their inability to effectively communicate problems or concerns, the use of medications formulated and packaged for adults, and the need for additional caregiver training and support. The rates of adverse drug events (ADE) in hospitalized pediatric patients are estimated to be 11.1 ADEs per 100 pediatric admissions and 1.23 ADEs per 1000 medication doses. In pediatric patients the rate of potential ADEs is three times higher than adults and the rate of medication errors resulting in harm or death at least twice that of adults. The purpose of this projec was to develop and implement a multi-faceted strategy to enhance pediatric medication safety at Aurora Health Care.□□Methods: A three-pronged approach was pursued that focused on 1) facilitating meaningfu interdisciplinary review of pediatric medication events at a system level, 2) establishing pediatric build of medication orders in the computerize physician order entry (CPOE) environment that are consistent with best practices, and 3) developing a pediatric reference tool for intravenous drugs. To facilitate system-level review of pediatric medication events a workgroup was created to analyze pediatric ADE data and review pediatric medication safety issues. A CPOE gap analysis was conducted to assess if Aurora Health Cares computer system was adhering to pediatric best practices. As a result of the CPOE gap analysis, a team was established to create pediatric medication builds tc enhance dose verification and product selection. In addition, an intravenous medication reference was created to serve as a tool for nursing and pharmacy staff.□□Results/Conclusions: □Data collection is ongoing. Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify four factors that place pediatric patients at a higher risk for ADEs compared to adults.

Describe three methods an organization may consider to enhance pediatric medication safety.

Self Assessment Questions:

Which of the following increases the risk of medication errors in pediatric patients?

A The use of medication in pediatric patients with similar pharmacod

B: The inability of pediatric patients to effectively communicate proble

C: The use of medications formulated and packaged for pediatrics.

D: Caregivers with pediatric expertise and training.

Which of the following was a method used to enhance pediatric medication safety?

A Creation of an intravenous medication reference tool for nursing ar

B Formation of a system wide nursing committee to analyze ADEs.

C Development of pediatric medication builds to enhance dose verifi

D Both A and C

Q1 Answer: B Q2 Answer: D

ACPE Universal Activity Number 0121-9999-13-858 -L05-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATION OF BLEEDING RISK PREDICTION SCORES FOR PARENTERAL ANTICOAGULANTS USED FOR VTE TREATMENT AT A UNIVERSITY HEALTH SYSTEM

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Purpose: To evaluate the utility of three venous thromboembolism (VTE) bleeding risk assessment scales in predicting clinically relevant bleeding in patients treated with parenteral anticoagulants for acute VTE.
□□

Methods: This study was approved by the IRB. A retrospective chart review identified patients from 2008 to 2011 with acute VTE using ICD-9 codes and objective diagnostic tests. Patients included received parenteral anticoagulation within 72 hours of diagnosis. Exclusion criteria were creatinine clearance <30 mL/min on fondaparinux, surgery within 48 hours, or long-term anticoagulation with INR >2 on admission. Data collected to calculate VTE bleeding risk scores included age, gender, comorbidities, laboratory values, ICU admission, and history of bleeding events. Bleeding was assessed up to 90 days after anticoagulation initiation. The primary endpoint was to determine which VTE bleeding risk scales (Kuijer, RIETE, or IMPROVE) most accurately predicted overall bleeding events. Data will be analyzed using descriptive statistics, Chi square, Fishers exact test, likelihood ratio and receiver operating characteristic curve.□□Results: To date, 92 patients have been screened with 55 patients meeting inclusion criteria. Patients were a mean age of 59.4 years, 70.9% female and 89.1% black. Sixteen patients had clinically relevant bleeding events. The majority of risk scores were classified as "intermediate" or "high" in patients experiencing bleeds. For the Kuijer and RIETE scales respectively, patients with bleeds were classified as: high 31.2% and 18.8%; intermediate 56.3% and 81.2%; and low 12.5% and 0%. The IMPROVE scale classified patients with bleeds as high risk (12.5%) and low risk (87.5%). Commonalities of those with bleeding include female gender (62.5%), malignancy (31.3%) and preexisting anemia (56.3%). The average scores for Kuijer and RIETE were higher in patients with bleed than those without.□□Conclusions: Preliminary data suggests the Kuijer and RIETE scales have greater accuracy in predicting bleeding outcomes in comparison to IMPROVE.

Learning Objectives:

Describe the three published bleeding risk assessment scales for use in patients with or at risk for venous thromboembolism

Identify characteristics that predispose patients to bleeding events when using parenteral anticoagulants for the treatment of acute VTE

Self Assessment Questions:

Which of the following statements is correct?

A The Kuijer, RIETE and IMPROVE scales evaluated bleeding in pa

B: The Kuijer, RIETE and IMPROVE scales evaluated bleeding in pa

C: The IMPROVE scale evaluated bleeding in patients receiving antic

D: The Kuijer scale evaluated bleeding in patients receiving anticoagu

Which of the following patient characteristics are incorporated in all three bleeding risk scales and predispose patients to bleed?

A Thrombocytopenia

B Age and malignancy

C Renal and hepatic function

D Anemia

Q1 Answer: C Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-790 -L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING MENS HEALTH EDUCATION IN US PHARMACY PRACTICE CURRICULUM

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Purpose: With a lower life expectancy and longer hospital stays compared to women, men accounted for just under half of the United States population in 2010. In pharmacy training, there has been little attention to mens health as compared to womens health. The objective of this study was to evaluate mens health education in the pharmacy practice curriculum of colleges/schools of pharmacy in the United States. The primary aim was to determine what mens health topics were taught in the colleges/schools pharmacy curriculum. The secondary aim was to evaluate where mens health information was taught, length of time given to teach this information, and the departments views about incorporating mens health in their curriculum. Methods: The study was conducted via an online survey using Survey Monkey. A list of department heads from colleges/schools of pharmacy in the United States was obtained from American Association of Colleges of Pharmacy (AACP) and schools in the pre-candidate status were excluded. An email was sent to the department heads one week before the release of the survey informing them of the survey. The survey was open for four weeks with a reminder e-mail sent half way through. The survey included demographic questions about the college/school of pharmacy, the mens health topics covered, where the information was covered, if student organizations were teaching mens health, and the colleges/schools views about incorporating mens health in their curriculum. Data will be analyzed using descriptive statistics. The impact of demographic variables on the number of hours of mens health taught will be assessed using t-test and ANOVA or a comparable non-parametric test as needed. The project was given exempt status by the Midwestern University Institutional Review Board.

Results/conclusions: Results and conclusions to be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Identify the Accreditation Council for Pharmacy Education requirements for mens health education.

Discuss the available literature describing the pharmacists role in mens health.

Self Assessment Questions:

Which of the following is included in the Accreditation Council for Pharmacy Education guidelines and standards?

A The college/school should identify a mixture of sites for pharmacy
B: The college/school should identify sites for pharmacy practice exp
C: The college/school does not need to identify sites for pharmacy pr
D: The college/school should identify sites for pharmacy practice exp

What was the impact of pharmacists on mens health in the study conducted by Boyle?

A Pharmacists counseling men about their prescriptions caused 33%
B Pharmacists counseling men about their health risks and encourag
C The patients in the telephone follow up group were 78% more likel
D Pharmacists explaining the benefits of their medication to men res

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-791 -L04-P

Activity Type: Knowledge-based Contact Hours: 0.5

THE ROLE OF STATINS AND VASOPRESSOR USAGE IN SEPTIC SHOCK

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Purpose: Septic shock is associated with a high incidence of mortality, despite treatment guidelines. There is a need for new treatments to assist in improving outcomes in septic shock. Statins have been evaluated in sepsis due to their potential anti-inflammatory and immunomodulatory effects, but results have been controversial. This study will evaluate the effect of statin continuation on vasopressor usage in patients with septic shock. Methods: This retrospective, observational study will evaluate adult patients with septic shock admitted to an intensive care unit from January 2009 to December 2012 Patients will be included if they were prescribed a statin prior to hospital admission. Data collected will include baseline demographics, Charlson Weighted Index of Comorbidity, APACHE II and SOFA scores, presence of steroids, and statin drug, dose and reason for discontinuation. Statin discontinuation will be assessed for appropriateness based on contraindications to statin therapy. Vasopressor data will include agent, dose (average, initial, maximum in norepinephrine equivalents), and duration of therapy. Discharge disposition, ICU, and hospital length of stay will also be evaluated. Results/Conclusion: Data collection and evaluation is ongoing and will be presented at the Great Lakes Pharmacy Residency Conference.

Learning Objectives:

Indicate the potential benefits (e.g. the pleotropic effects) of statins in patients with sepsis.

Discuss the current controversy in the literature surrounding statin use ir patients with sepsis.

Self Assessment Questions:

Which of the following is a potential benefit of statin therapy in patients with septic shock?

A Immunomodulatory and anti-inflammatory effects
B: Increase in catecholamine production
C: Decreased fluid needs during resuscitation
D: Increased oxygenation

Many of the studies evaluating statin therapy in patients with sepsis are controversial due to

A The authors "fishing" for results
B Heterogeneity among treatment groups, which introduces bias
C Use of the wrong statistical analyses in the trials
D Potential pharmaceutical industry influence

Q1 Answer: A Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-630 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DETERMINING THE OPTIMAL CREATININE CLEARANCE DOSING WEIGHT FOR VANCOMYCIN IN THE OVERWEIGHT & OBESE POPULATION USING THE GLOBALRPH ONLINE MEDICAL CALCULATOR

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Purpose: Vancomycin is a glycopeptide antibiotic that is widely used to treat gram-positive organisms including methicillin-resistant Staphylococcus aureus (MRSA). As obesity becomes a growing epidemic within the United States, there is a need to identify the proper method to dose vancomycin in this population due to their altered pharmacokinetic parameters. At our institution, the GlobalRPh online medical calculator is used for empiric vancomycin dosing. The primary objective is to determine whether adjusted body weight or ideal body weight used to calculate creatinine clearance (CrCl) would achieve the closest prediction values to actual trough levels obtained. Method: A retrospective observational chart review was conducted from November 2011 to August 2012. Patients with a total body weight to ideal body weight ratio ≥125% that received IV vancomycin with a steady state trough level were included in the study. Patients who had unstable renal function, a stable serum creatinine greater than 1.5mg/dL or less than 0.5mg/dL, or received a department policy maximum initial vancomycin dose of 1500 mg every 8 hours were excluded. To determine the predicted vancomycin trough levels, the vancomycin dosing regimens patients received were retrospectively inputted into the GlobalRPh online medical calculator using either adjusted body weight or ideal body weigh in the Cockcroft-Gault CrCl equation. The predicted trough levels were compared against the actual trough levels obtained from the electronic medical record. The absolute difference between the predicted levels and actual levels was the primary outcome. Results/Conclusions: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Review the current IDSA guideline recommendations for vancomycin dosing

Identify potential adverse effects associated with vancomycin

Self Assessment Questions:

According to the current IDSA guidelines, which body weight should be used to dose vancomycin?

A Lean body weight

B: Ideal body weight

C: Adjusted body weight

D: Total body weight

Higher vancomycin trough level targets have been associated with an increase in which of the following adverse effects?

A Red Man Syndrome

B Nephrotoxicity

C Vasculitis

D Neutropenia

Q1 Answer: D Q2 Answer: B

ACPE Universal Activity Number 0121-9999-13-631 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

EVALUATING AND IMPROVING THE USE OF NON-INTRAVENOUS ANTIBIOTICS IN THE OPERATING ROOM: A SINGLE CENTER REVIEW

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Statement of the purpose: There is conflicting data referencing the use of non-intravenous (non-IV) antibiotics for prophylaxis during clean-site surgical procedures. At Ministry Saint Josephs Hospital (MSJH), vials of antibiotics are available in the operating room (OR) for preparation by OR staff for procedural use. MSJH does not currently have a specific protocol pertaining to safe and effective use of non-IV antibiotics during surgical procedures. The primary objective of this project is to optimize and standardize the use of non-IV antibiotics in the OR. The secondary objective is to quantify antibiotic utilization and assess compliance with The Joint Commission Medication Management standards of labeling and preparation post implementation. Statement of methods used: Data for this project was obtained from a retrospective review of antibiotics given in the OR. Data was also obtained via voluntary data collection by OR nursing staff, which included type of surgical procedure antibiotic given, dose, strength, and route of administration. This process occurred from November 1, 2012, to February 28, 2013. For a patients data to be included for analysis, they had to have been at least 19 years of age at the time of procedure and have received a non-IV antibiotic during a clean-site surgical procedure. Patients who were diagnosed with a concurrent infection were excluded from the data set. Based on project findings, methods for process improvement will be identified, presented to stakeholders, and implemented. Antibiotic utilization will be quantified and compliance will be assessed pre and post implementation. Summary of preliminary results to support conclusion: Early results indicate that vials of antibiotics are procured from OR satellite pharmacy by multiple surgical services and prepared during the surgical procedure by nursing staff into various non-IV dosage forms under non-sterile conditions. Final results will be reported at the Great Lakes Pharmacy Resident Conference.

Learning Objectives:

Describe the formulations of non-IV antibiotics being created in the OR for use in clean-site surgeries at MSJH

Review recommendations made to stakeholders at MSJH post data-collection phase

Self Assessment Questions:

What is the approved expiration for medications prepared under non-sterile conditions?

A One day

B: One hour

C: One week

D: Twelve hours

What staffing service compounds the majority of non-IV antibiotics prepared during surgical procedures in clean-site infections?

A Pharmacy technicians

B Pharmacists

C Nursing staff

D Physicians

Q1 Answer: B Q2 Answer: C

ACPE Universal Activity Number 0121-9999-13-632 - L01-P

Activity Type: Knowledge-based Contact Hours: 0.5

DEVELOPING AND IMPLEMENTING NEW PROCEDURES TO DECREASE THE WASTE ASSOCIATED WITH BIVALIRUDIN (ANGIOMAX) USE IN THE CATH LABS AT ASLMC

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Purpose:□Bivalirudin (Angiomax) is a commonly used medication during percutaneous coronary intervention (PCI). Additionally, it is consistently one of the top 5 medications in drug cost at Aurora St. Lukes Medical Center (ASLMC) due to the high cost per vial and the large number of PCIs performed. The purpose of this project is to develop and implement changes to current workflow to aid in the reduction of bivalirudin waste in the cardiac catheterization (cath) lab at ASLMC.□□Methods:□Current practice in the cath lab was assessed. Data was collected and analyzed from one month of procedures in which bivalirudin was used. It was determined that utilization of syringe pumps may decrease two of the causes of unnecessary bivalirudin waste, excess waste in the tubing and large aliquot size. Optimal aliquot size was determined from the preliminary data. Batching of bivalirudin syringes occurred in the pharmacy IV room which allowed for extended stability when stored in refrigerators in the cath lab procedure rooms. This ultimately allowed for smaller aliquots to be delivered through microbore tubing during the PCI procedures.□□Results:□Results from the preliminary data suggested that implementation of this change would result in a decrease in average bivalirudin waste from 23 mL to 13 mL per procedure (a 44% reduction in waste). This would result in a total reduction in bivalirudin waste of 21 L per year and an associated cost savings of $250,000 per year at ASLMC. Post-implementation results are not yet available.□□Conclusions:□Conclusions from preliminary data suggest that utilizing a syringe pump for bivalirudin administration may significantly reduce waste and promote substantial cost savings. Post-implementation conclusions are not yet available.

Learning Objectives:

Describe an alternative workflow that may be implemented to decrease the waste associated with bivalirudin use in the cardiac catheterization lab.

Explain the mechanisms by which utilization of a syringe pump can decrease bivalirudin waste.

Self Assessment Questions:

What change in workflow may allow for a reduction in bivalirudin waste during percutaneous coronary intervention?

A Having nurses concentrate bivalirudin bags so that less volume is

B: Having nurses prepare multiple bivalirudin bags from the same via

C: Having pharmacy technicians prepare bivalirudin syringes to be ac

D: Having pharmacy technicians prepare multiple bivalirudin bags in a

Identify two ways that utilizing syringe pumps can decrease bivalirudin waste.

A Decreased waste in the tubing and allows for optimization of bivali

B Allows for a slower rate of infusion and allows for optimization of b

C Decreased waste in the tubing and removes the requirement for a

D Allows for a slower rate of infusion and removes the requirement f

Q1 Answer: C Q2 Answer: A

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